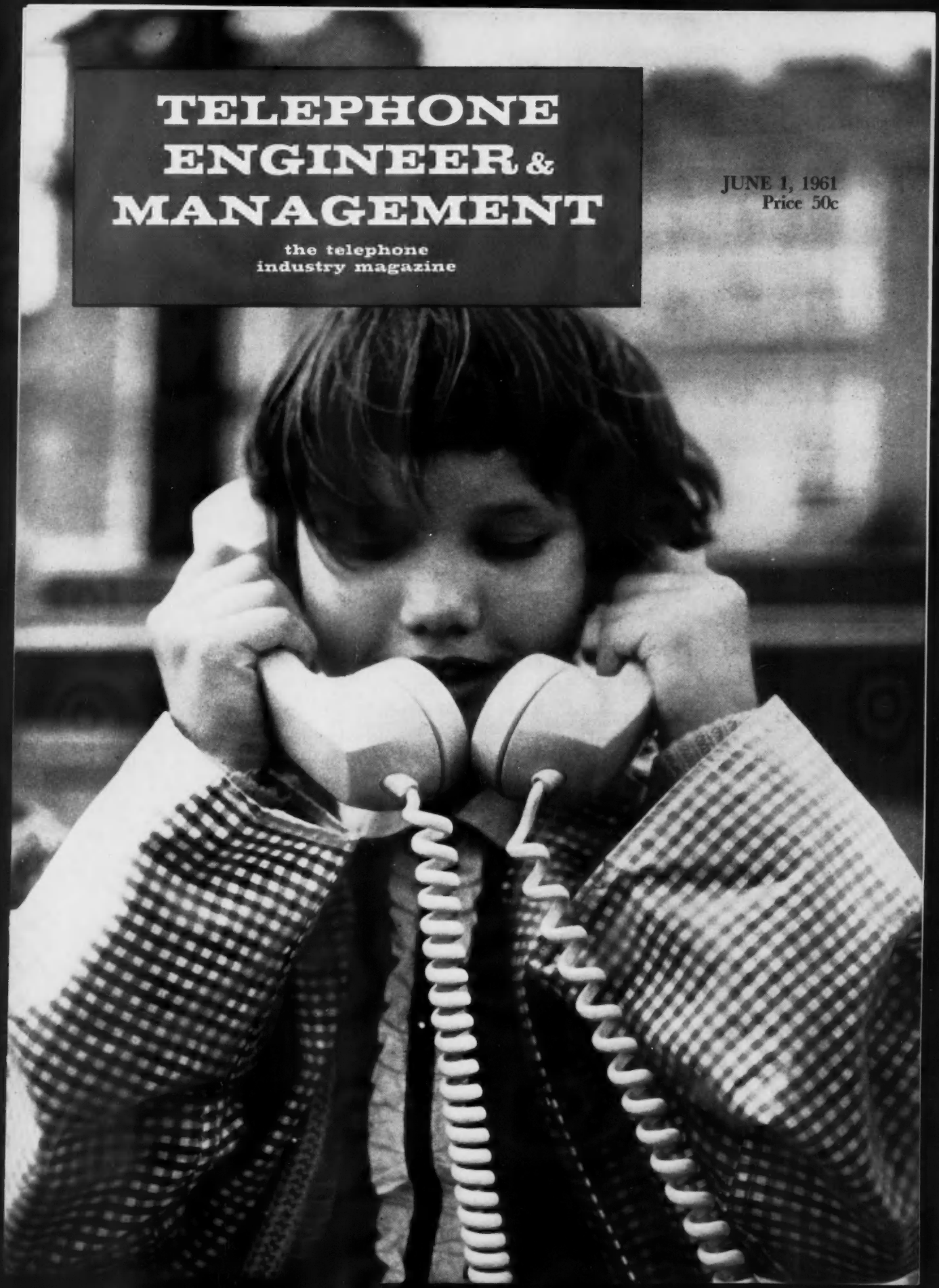
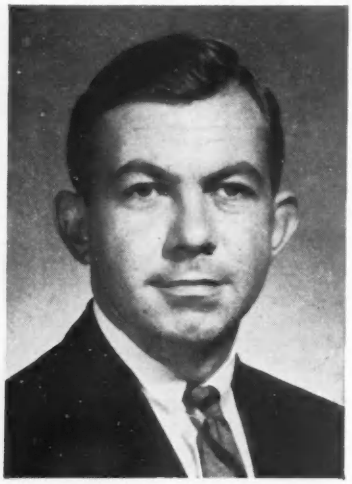
TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

JUNE 1, 1961
Price 50c



Let our "Revenue Men" GIVE YOU COMPLETE DIRECTORY SERVICE



Take a man like

Fred Dorr...

Fred is one of our "Revenue Men" in Durham, North Carolina.

29 years old, Fred is a good example of the young, energetic men who help telephone companies increase their revenue from telephone directory sales.

After serving with the U. S. Army in Korea, Fred joined the General Telephone Directory Company in 1954. He was promoted to Sales Supervisor of the Durham unit in 1957.

Fred is a man who likes to get out and do things. During his college days at the University of Kentucky, he was a member of no less than seven campus organizations—including the Student Government Association. Now married, with three children, he keeps active in community affairs as member of the American Legion, VFW and BPOE.

You'd like Fred Dorr. He's typical of the "Revenue Men" who work for General Telephone Directory Company—and for you. Men who are a credit to any community.

From A to Z, we can give you complete, quality directory service—sales, publishing and printing. Wherever you operate, our trained "Revenue Men" are nearby. They're working out of 35 strategic locations coast to coast.

Our "Revenue Men" act as telephone company representatives in their day-to-day contacts with your customers. They're not only salesmen—they are also good-will ambassadors for you, in their dealings with the public.

They're experienced hands at helping Independent Telephone Companies, both large and small. So why not let us build directory revenue and good will for you through our complete service? Write or phone if you'd like to discuss it—without obligation!

GENERAL TELEPHONE DIRECTORY COMPANY

1800 Oakton Boulevard
Des Plaines, Illinois
VAnderbilt 7-6111

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THE TE&M FRONT COVER

Bringing a breath of youth and springtime to our cover this month is pretty little KATHY MARTIN, 7, of Gallipolis, Ohio. A few weeks ago Kathy's friend, Terry Lloyd, encouraged his father, Oney Lloyd, Ohio Bell installer-repairman, to visit their class at Washington Elementary School. After Terry proudly announced, "This is My Daddy — he installs telephones for people," Mr. Lloyd talked to the students about his job. — (Courtesy "Ohio Bell Magazine")

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POSTMASTER . . . Please send form 3579 to TELEPHONE ENGINEER & MANAGEMENT, 7720 N. Sheridan Rd., Chicago 26, Ill.

ALCOA BOOTHS BOOST REVENUE BY 15 PER CENT!

In Hickory, North Carolina, Central Telephone Company reports:

"More than half our outdoor booths are Alcoa Aluminum outdoor booths," says Mr. W. R. McGrew, division manager for Central Telephone Company, Hickory, N. C. "And some of them have been in use for more than four years. We estimate a *10 to 15 per cent increase in revenue* from Alcoa booths over others!

"Maintenance-free, easy to keep clean and neat, well lighted, Alcoa booths seem to actually *attract* customers. Doors don't stick . . . glass breakage is less . . . and we don't have to constantly repaint aluminum booths," Mr. McGrew avers.

Solidly built with Alcoa® Aluminum Extrusions, these booths resist normal wear and tear—and vandalism as well! The Alumilite* finish stays bright and clean. Aluminum won't rust . . . resists corrosion. If space is no problem, look to large and sturdy Alcoa outdoor booths. For indoor (and sheltered exterior) installations, check on the new Alcoa "Compact" booth—only 28¾ in. square! Whichever booth you need, call your telephone supply jobber . . . or write: Aluminum Company of America, 1781-F Alcoa Building, Pittsburgh 19, Pa. World-wide sales through Alcoa International, Inc., 230 Park Avenue, New York 17, N. Y.

*Trade Name of Aluminum Company of America

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

get the INSIDE STORY on

AE's 1961 Supply Catalog is the place to find everything you need for inside plant installations...everything from interior cable to plugs and jacks. In fact, the AE catalog is the best reference you have for all telephone equipment or supplies. Consult yours today! And remember, at AE you get *fast delivery* from a *large stock* of *famous brands.*

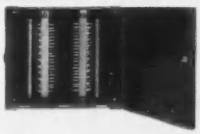
GENERAL CABLE WIRING CABLE

Plastic insulation and jacket. From 6 to 101 pairs in 24 and 22 AWG conductor sizes. Individual wires insulated with semi-rigid compound. Pairs are staggered to reduce crosstalk. Fully color coded.

ALPHADUCT INTERIOR WIRE

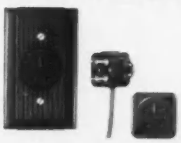
Tough thermoplastic covering over solid, annealed copper conductors. Colored rayon marker threads. In 2, 3, or 4-conductor assemblies.

TYPE 75 BUILDING TERMINALS



Standard 4-inch deep box is designed for easy surface mounting. Terminal strips have screw-type binding posts for distributing wires, soldering terminals for cable wires.

PLUGS AND JACKS



For surface mounting. Can be supplied with flush plates for mounting in standard switch box. Plug has screw terminals for spade-type cord connections. Brown or ivory plastic.

AE Warehouses

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HArrison 1-7575

Northlake, Illinois
Fillmore 5-7111

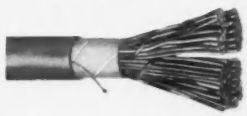
Portland 10, Oregon
2360 N.W. Quimby St.
CApital 3-7244

Richmond 21, Virginia
2915 Moore Street
ELgin 8-9280

STAPLING GUNS

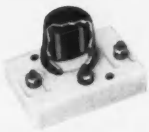
AE has a variety of stapling guns for securing wires to walls, mouldings or desks. All are designed for good holding power in wood, plaster or board, using a wide range of staples suitable to any job.

GENERAL CABLE SWITCHBOARD CABLE



Spiracode color coded. Colors extend through entire insulation—can't wear off. Plastic insulation and sheath. Designed for easy installation. Attractive gray sheath.

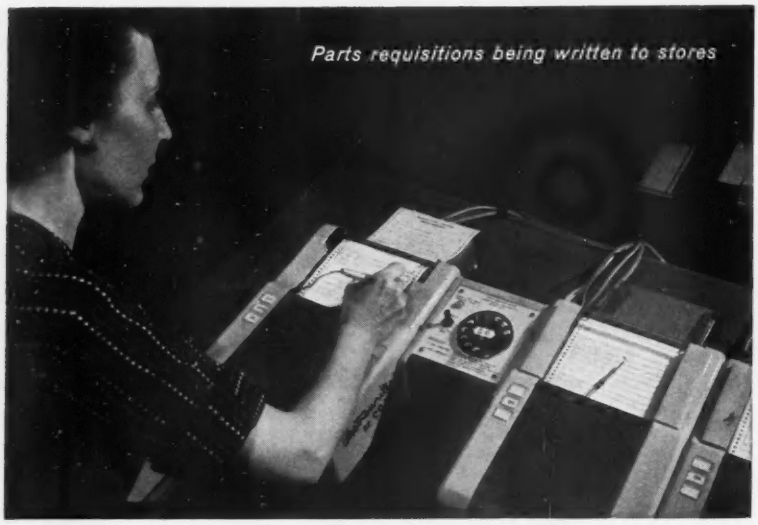
RELIABLE INDOOR STATION PROTECTORS



Simple, one-piece design makes mounting and installation easy. Static discharges are drained instantly without leaving the line grounded.

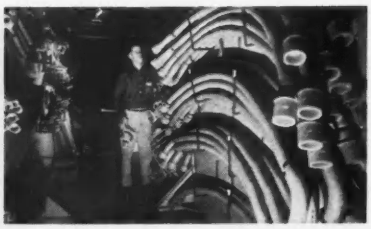
COMCO REPLACEMENT CORDS

AE carries a complete line of Comco cords to fit any popular make of phone. Coiled or straight cords in full range of colors. Special lengths and finishes available.



Boeing saves manhours, expedites parts requisitioning with Electrowriter® Systems

When key production or field areas at Boeing's Transport Division urgently need parts, they request them by writing directly on Electrowriter Transmitters to . . .



. . . remote parts stores. Here, written requests are instantly recorded as the sender writes. Stock clerks take Electrowriter messages, quickly fill orders.

Electrowriter Systems have streamlined special parts requisitioning for the Transport Division of Boeing Airplane Company at Renton and Seattle, Washington. Formerly, urgent parts requests were handled by messenger, telephone, or squawk box. Now, with Electrowriter substantial savings in manhours are effected on the production lines and in parts stores. The savings pay for the Electrowriter Systems many times over. There are no more verbal mixups or delays. Immediate transmission of written requisitions speeds receipt of parts and provides permanent records which pinpoint responsibilities. At the parts stores Electrowriter receives questions completely unattended, releasing personnel for order filing.

Electrowriter combines the speed of the telephone voice with the accuracy of written instructions. Send for complete information.

Electrowriter®
COMMUNICATIONS SYSTEMS BY
COMPTOMETER

Comptometer Corporation, 5600 Jarvis Avenue, Chicago 48, Illinois. SPring 5-2400. Offices in Principal Cities.

coming CONVENTIONS

PENNSYLVANIA Tel. Assoc., Pocono Manor Inn., Pocono Manor, Pa., June 5-7.

NATIONAL Safety Council's Public Utilities Section, Executive Committee, Laurentien Hotel, Montreal, Quebec, Canada, June 13-14.

WASHINGTON-OREGON Tel. Assoc., Empress Hotel, Victoria, B. C., June 15-16.

NEW YORK Tel. Assoc., Scaroon Manor, Schroon Lake, N. Y., June 19-21.

CALIFORNIA Tel. Assoc., Hawaiian Village, Honolulu, Hawaii, June 26-30.

ALASKA Tel. Assoc., Hotel Not Announced, Palmer, Alaska, Aug. 21-23.

ROCKY MT. Tel. Assoc., Owyhee Hotel, Boise, Sept. 13-15.

GEORGIA Tel. Assoc., Corsair Motel, Jekyll Island, Ga., Sept. 14-15.

MICHIGAN Tel. Assoc., Pantlind Hotel, Grand Rapids, Mich., Sept. 19-21.

NEVADA Tel. Assoc., Stockmens Hotel, Elko, Nevada, Sept. 19-21.

WEST VA. Tel. Assoc., Oglebay Park Hotel, Wheeling, W. Va., Sept. 26-27.

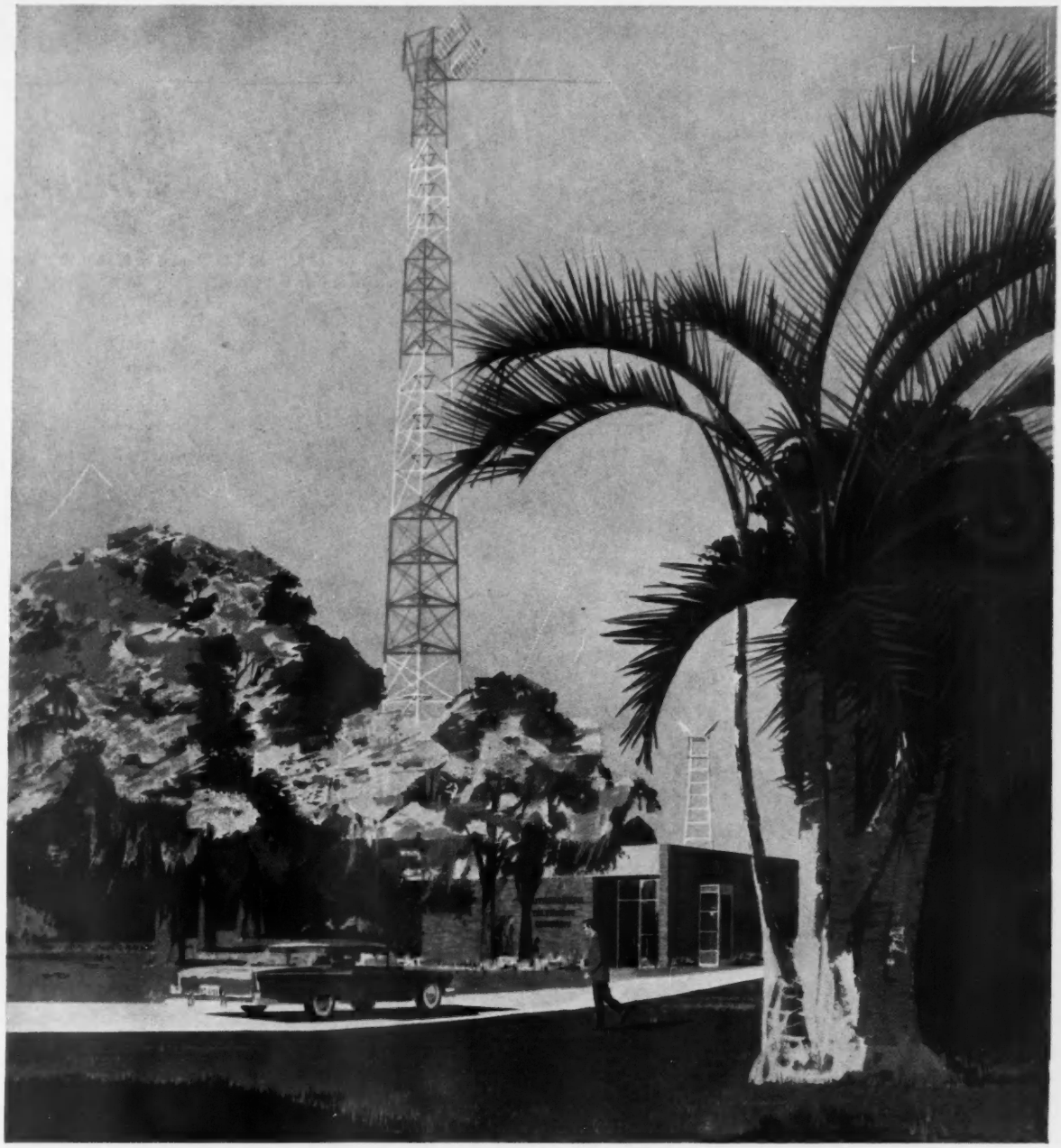
USITA CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 8-11.

SOUTH CAROLINA Tel. Assoc., Clemson House, Clemson, S. C., Oct. 23-24.

VIRGINIA Tel. Assoc., Roanoke Hotel, Roanoke, Va., Oct. 26-27.

OKLAHOMA Tel. Assoc. Skirvin Hotel, Oklahoma City, Okla., Nov. 8-9.

FLORIDA Tel. Assoc., The Carillon Hotel, Miami Beach, Fla., Nov. 26-28.



SOUTHEASTERN TELEPHONE COMPANY expands with Collins L1-compatible carrier for direct toll system interconnection.

Growing toll traffic from Florida's capital city area has led Southeastern Telephone Company to expand to 180 channels on its main toll outlet, a 26.4 mile Collins Microwave System between Tallahassee and Monticello, Fla. At Monticello, three super groups are fed directly at baseband frequencies into the Southern Bell TD-2 system. Direct compatibility of Collins Carrier with Western Electric L Carrier — both L1 and L3 allocations — eliminates back-to-back voice frequency equipment at the interconnect point. Southeastern is also enlarging its plant in West Florida with a new four station Collins Microwave and Carrier System providing special service voice and data circuits for Eglin Air Force Base. For consultation and assistance on your expansion program, contact Collins Radio Company, Texas Division Sales, 1930 Hi-Line Dr., Dallas 7, Texas.

COLLINS MICROWAVE AND CARRIER

COLLINS

COLLINS RADIO COMPANY • DALLAS, TEXAS • CEDAR RAPIDS, IOWA • BURBANK, CALIFORNIA

most promotable phone...
most promotional support

Cinderella

...by ITT KELLOGG

HERE'S OUR SPECIAL OFFER TO HELP YOU SELL

You buy just 6 phones...

6 Cinderella phones, one of each color (rose pink, aqua blue, light beige, light gray, white, sea green) at their regular prices.

WE GIVE YOU...

CINDERELLA DISPLAY TELEPHONE. Helps call attention to your Cinderella phones. For your windows or business office. "Dummy" shell complete with handset. WORTH $5.00, YOURS FREE!

REVOLVING CINDERELLA DISPLAY TELEPHONE. Attention getting display phone revolves for 30 days on ordinary flashlight batteries. Needs no additional wiring, plugs. WORTH $8.00, YOURS FREE!

and, the most sales-producing promotional kit in the industry!

Everything you need for your own promotional program:

SELLING TIPS. Down to earth discussion of your markets, lists most likely prospects... how to get full benefit from all materials in the kit.

INVOICE INSERTS AND FOLDERS
WALL/WINDOW/TRUCK POSTER
NEWSPAPER AD MATS

DISPLAY IDEAS FOLDER. Clear, crisp ideas for your window and business office displays.

OFFER LIMITED. ORDER TODAY!

Don't miss out on the extra sales, the extra revenue you can enjoy from the Cinderella . . . it's the most promoted, most promotional telephone design in the industry. You simply order 6 phones and we give you the display telephone, revolving phone, and complete kit to help you sell Cinderella.

Call your ITT Kellogg representative or the regional office nearest you . . . and call today.

ITT **KELLOGG**

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NEWSLETTER
TELEPHONE INDUSTRY

Prepared By The Editorial Staff of TELEPHONE ENGINEER and MANAGEMENT

ON THE 1st OF EACH MONTH ★ ON THE 15th OF EACH MONTH

Dear Sir: June 1, 1961

THREE PROMINENT ENGINEERS TO SPEAK AT USITA'S TELEPHONE ENGINEERING CONFERENCE . . . Three outstanding speakers have been scheduled to address the USITA Telephone Engineering Conference which will begin June 25th at Michigan State University. They are: Frederick L. Kahn, director of Telephone Switching System Development, Automatic Electric Laboratories, Inc.; R. R. Dobbin, chief engineer, Telecommunications Division of General Dynamics | Electronics: & J. H. Felker, assistant chief Engineer, American Telephone & Telegraph Co.

On June 28, Frederick Kahn will address the group on toll ticketing equipment, automatic number identification & All-Number-Calling. On July 5, R. R. Dobbin will discuss the status of development of electronic switching equipment & its use in telephone industry on a commercial basis. On July 12, J. H. Felker will report on things to come and devices currently being developed by Bell Telephone Laboratories.

REA ELECTRIC AND TELEPHONE SYSTEMS URGED TO STEP UP CONSTRUCTION, PURCHASES . . . Administrator Norman M. Clapp of the Rural Electrification Administration has called upon more than 1,700 REA-financed rural electric and telephone organizations to back President Kennedy's economic recovery drive by accelerating their purchases & construction now, U. S. Department of Agriculture announced.

"I urge you to review your procurement and construction programs now to identify those which may be accelerated," Administrator Clapp wrote REA borrowers. "Advance your procurement and construction schedules as much as possible consistent with prudent operation," he suggested.

Specifically, Administrator Clapp asked REA borrowers to place orders now for line materials & equipment, central office equipment, tools, & motor vehicles, & to expedite construction of electric & telephone plants.

Such activities by rural electric & telephone systems, he declared, "could put millions of dollars in wages, salaries, and purchases into the economy within the next few weeks, hastening both local recovery and improvement of our national economy."

UNITED UTILITIES, INC. REPORTS REVENUES & INCOME UP . . . . Larger revenues & net income have been reported for quarter & 12 months ended March 31 than a year earlier by United Utilities, Inc. For the 1st quarter, consolidated net income was $1,616,599, equal to 63 cents a common share, against $1,439,189, or 57 cents a share earlier on smaller number of shares outstanding. In April common stock was split 2-for-1, and on adjusted basis quarter's earnings were equal to 32 cents a share, against 28 cents. In the 12-month period, net income amounted to $6,331,491, equal to $2.48 a common share, against $5,320,067, or $2.21 a share. Average number of shares outstanding during the 12 months was 2,553,678, against 2,412,848 a year earlier.

The company, which provides telephone, power, gas, water & propane service to some 550 communities in 16 states, reported revenues for the quarter of $12,368,416, against $11,403,925 a year ago. The 12-month gross income of $48,121,363 compared with $43,722,553 a year before. Good headway was made in

P
PRODUCT DEPENDABILITY *is built into*
D
Phelps Dodge P D-Tel Wire!

In every Phelps Dodge P D-Tel wire, dependability of product is recognized as the first requirement for satisfactory service.

Phelps Dodge achieves product dependability by combining years of manufacturing experience with the most modern research and development facilities throughout its fabrication process. This controlled method of building in quality *during* manufacture assures customers reduced maintenance costs and trouble-free service—important advantages that only true product dependability makes possible.

Phelps Dodge will gladly help you fill your requirements for Drop Wire, Distributing Wire, Station Wire, Bridle Wire, Interior Wire, Tree Wire, Jumper & Duct Wire and Ground Wire, recommend the correct construction to fit your needs. Just call your nearest Phelps Dodge sales office.

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CORPORATION

SALES OFFICES: Atlanta, Birmingham, Ala., Cambridge, Mass., Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Dayton, Denver, Detroit, Fort Wayne, Greensboro, N. C., Houston, Indianapolis, Jacksonville, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester N. Y., San Francisco, St. Louis, Seattle, Tampa, Washington, D. C.

(concluded from page 10)

additions during the quarter, with $6,400,000 spent for improvements & expansion, according to C. A. Scupin, president. The system plans to spend 27-½ million during 1961 — a record amount.

MAURICE F. WRIGHT DIES . . . . Maurice F. Wright, president and general manager of the Carnegie Telephone Co., Carnegie, Oklahoma, died on Friday, May 5th, following a heart attack.

Mr. Wright was 51 at the time of his death. He had been engaged in the telephone business at Carnegie practically all of his life. He succeeded his father as owner and manager of the Carnegie exchange and completed a modernization of his plant and conversion to dial on November 1, 1959. He is survived by his widow and five children. A son-in-law, Wesley Johnson and his wife are active in the operation of the telephone business.

SYSTEM SENDS DATA VIA PHONE AT HIGH SPEED . . . . New data transmission system, designed to send messages at rate of 1,000 to 1,500 words a minute over regular telephone hookup, was demonstrated in Chicago, May 9 by Digitronics Corp., Albertson, N. Y.

The system, called Dial-o-verter, operates in conjunction with the Bell System's Data-Phone 200 subset, which translates voltage signals into tone signals and back again. Dial-o-verter has its own built-in correcting devices to insure accuracy and can send or receive data recorded on punched or magnetic tape or punched cards in any combination. For example, data sent on punched tape can be received on magnetic tape.

PENNSYLVANIA PUC SETS UP NEW TYPE OF BUREAU . . . Formation of bureau to speed investigation & action on utility service complaints & tighten enforcement operations has been announced by Pennsylvania Public Utility Commission. New section, to be called Bureau of Investigations, Service & Enforcement, will be headed by E. Donald Reighard, who was in charge of a former service section merged into new agency.

Commission said new section represents unification of investigation & enforcement work for first time in commission's history & is regarded to be only one of its kind among nation's regulatory agencies.

At start, Reighard will direct activities of some 60 employes, including engineers, investigators & technicians, virtually all drawn from present personnel lists. Bureau's activities will be coordinated in five district offices responsible to headquarters in Harrisburg. Other offices will be in Philadelphia, Pittsburgh, Altoona and Scranton. Commission said district offices will cooperate with Reighard in prompt handling & fast follow-through of every type of formal & informal service problem.

MICHIGAN PHONE RATE PLAN GIVEN APPROVAL . . . Michigan's State Public Service Commission has announced its approval of plan of Michigan Bell Tel. Co. to offer its business subscribers long distance telephone service within state at flat monthly rate. Commission said plan would save $600,000 a year each, both for Bell customers & for the company. Plan divides state into four districts, & rates — from $300 to $700 a month — would be based on number of districts subscriber included in his plan. For $100 to $225 a month, customer would be allowed up to 15 hours of intrastate calls. Unlimited service throughout entire state would cost $700 monthly, commission explained.

AN EXPANDING LINE OF WIRE TERMINALS and WIRE TERMINAL BLOCKS

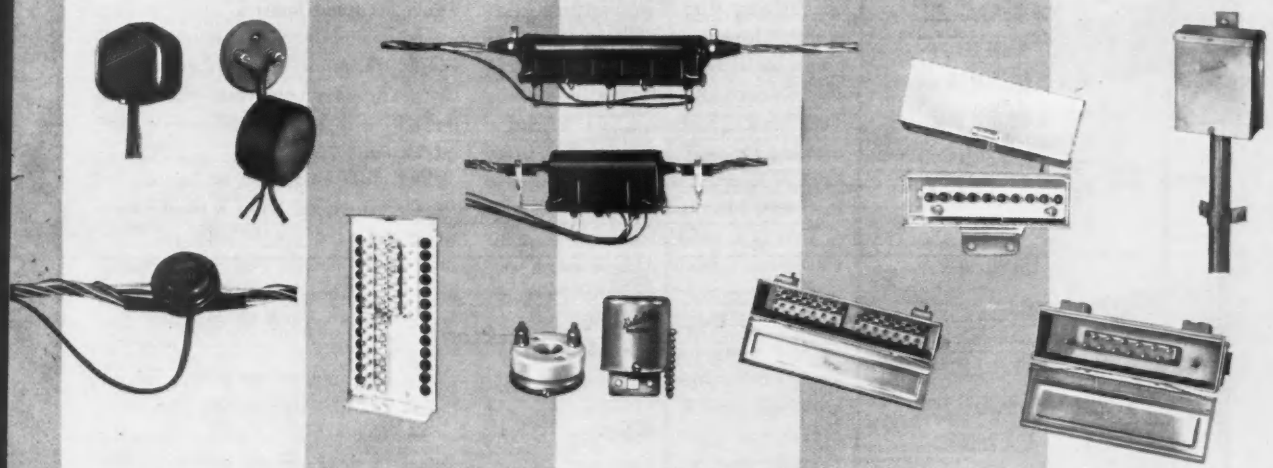
WIRE TERMINALS — Now in 31 catalog numbers

For use at junctions between multiple line wire and drop or bridle wire . . . in sizes 1, 2, 3, 5, 6, 11, 12, 16, 18 and 26 pair. All terminals are self-mounting or supplied with a mounting bracket.

PROTECTED • UNPROTECTED

Protected types use discharge washers or Reliable's Telegard Protector Units.

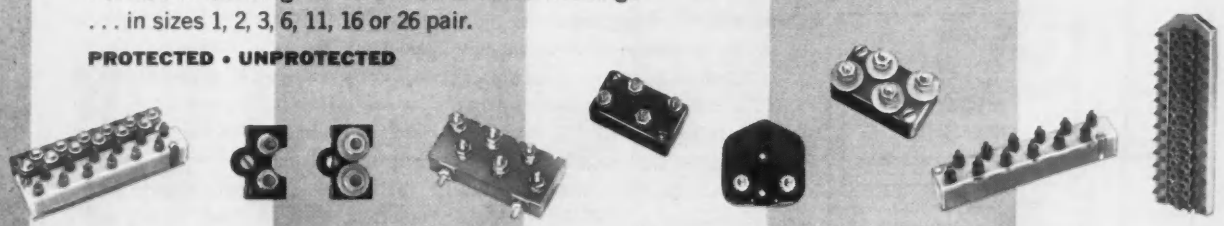
- For paper or plastic cable protection
- For station protection



WIRE TERMINAL BLOCKS — Now in 28 catalog numbers

For use in building boxes or buried cable housings . . . in sizes 1, 2, 3, 6, 11, 16 or 26 pair.

PROTECTED • UNPROTECTED



Do you have a particularly difficult installation problem? Our engineering department may be able to help you solve it.

THE TELEGARD UNIT

The Telegard Protector Unit is the heart of Reliable protected Wire Terminals and Wire Terminal Blocks. It is a completely self-contained, weatherproof screw-in unit with replaceable components.

Write for detailed engineering information on Wire Terminals or Wire Terminal Blocks.

Reliable

ELECTRIC COMPANY • ***Franklin Park, Illinois***

A Symbol of Integrity Since 1909

HIMCO
fiberglass
SAFETY
LADDERS
COST LESS
TO USE!

LIGHT-WEIGHT

NON-CONDUCTIVE

UNRIVALED
STRENGTH AND
DURABILITY

SAFETY
ENGINEERED

MAINTENANCE-FREE

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14.1 and 14.2

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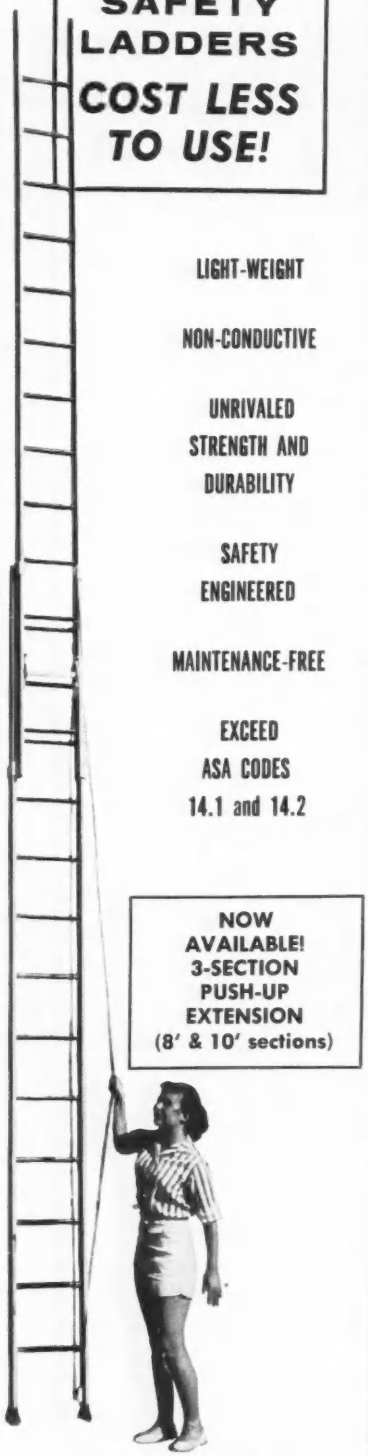

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INDUSTRY OBSERVATIONS

By L. A. GRITTEN

We Shall Convene At . . . .?

THREE of the 1961 Independent telephone conventions will be unconventional. They are leaving their old haunts. The Pacific Northwesterners, Oregon and Washington, are going to Victoria, British Columbia. The Californians will meet in Hawaii. The Rocky Mountain I.T.A., after meeting for many years in Salt Lake City, will stage its 1961 convention in Boise, Idaho.

This is a good idea, even if it involves extra work. The simplest way for a convention committee to avoid a mass of troublesome detail is to "follow the pattern" and do what has always been done, in the same way, at the same place.

But too many telephone people (usually those who have most to gain by attendance) stay away from their state conventions. They are "too busy," or they have "heard and seen it all before." When sameness fails to attract, a change of location may be an excellent tonic.

At the risk of being torn limb from limb by infuriated U.S.I.T.A. workers, we suggest that even our national convention would do well to move around and get acquainted with the peasantry. Chicago is perhaps a lovely city, if you stay close to the lake; and we'll admit that Conrad Hiltons don't sprout in every hamlet. But even so, somewhere between Boston and San Diego, Miami and Seattle, there must be some desirable alternative locations.

Publilius Syrus said it, nearly 2000 years ago: "No pleasure endures unseasoned by variety."

High Cost of Too Much

STANLEY S. SURREY, Assistant Secretary of the U. S. Treasury, proposes that Social Security payments shall be taxed on the same basis as other income. He also wishes to tax, as income, the rental value of owner-occupied houses.

The first of these suggestions would rankly dishonor our obligation to those who have been taxed for Social Security as it is now, with tax-exempt payments.

The other suggested tax would be in effect a capital levy; it would hurt worse the aged people who put their savings into houses wherein they hope to live and die. It is a Socialistic expedient that would thoroughly discourage saving.

We need not worry unduly about the suggestions themselves. Congress, with 16,000,000 Social Security voters to worry about, will kick Mr. Surrey's plans into the obscurity they merit. But this is a sad revelation of thinking in Governmental circles. If the High Cost of Too Much Government pinches us so badly that the U. S. Treasury must resort to that sort of tactics, in Heaven's name let us have less government. We can do better with much less.

If we are subjected to much more taxation, we may find ourselves in the chaos of violent transition to some other form of government. That has been the fate of over-taxed countries throughout recorded history.

Telephone Man Roosevelt

THE GENIUS of the Roosevelts has not overlooked our industry. We read in an ancient handbook, vintage 1882, that the first telephone switch hook was patented by H. L. Roosevelt. Further enquiry elicited this information from the Franklin D. Roosevelt Library:

Hilborne Lewis Roosevelt (1849-

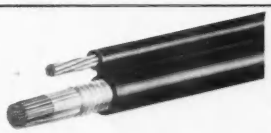
SUPERIOR
Communication Wires and Cables

Quality engineered and manufactured, completely insulated and sheathed in modern plastics!

TEL-U
Fully color-coded to industry specifications. Longitudinal 8 mil aluminum shield, corrugated in all sizes, 6 to 400 prs. in 24, 22 and 19 gauge. To 600 prs. in 22, to 900 prs. in 24.

TEL-CU
Fully color-coded. Longitudinal 5 mil copper shield, corrugated in all sizes 6 to 400 prs. 24, 22 and 19 gauge.

IM CABLE
Galvanized high-strength stranded steel messenger. Overall jacket of high molecular weight polyethylene. TEL-U or TEL-CU core construction in 18 to 100 prs., 24, 22, or 19 gauge.

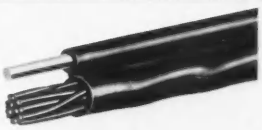


THREE-IN-ONE
A composite cable in which twisted pairs, triples and quads with special shields and individual jackets are cabled and collectively shielded and jacketed under one cover.

INTERCOM
Inside wiring cable, multiple conductor paired. Fully color-coded for intercommunication, inside telephone sound systems. Special vinyl jacket.

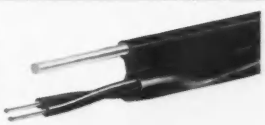
INSIDE WIRES & CABLES
Jacketed inside-outside wire. Duct wire (twisted). Flat web type. Jumper wire. Distributing frame wire. Ground wire.

IM-RDW
Rural Distribution wire with integrated messenger of high strength galvanized steel. All weather core. Conductor insulation is high-density, black polyethylene with exclusive permanent inlaid color-coding stripe.



"SUPER SPLICE"
Splice sleeve with one end sealed. Filled with insulating and waterproofing material. Use to keep splices waterproof. REA standard.

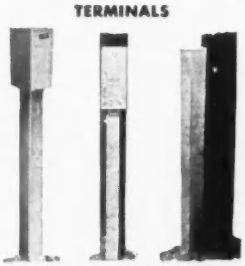
IM-119 RDW
One pair distribution wire to replace "C" Rural and for long drop wire extensions. Integrated messenger permits supporting wire only to be gripped by tangent support. Same construction as IM-RDW.



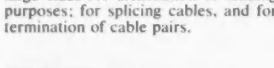
TS 222 TS 934
Tangent supports, designed for use with IM-RDW and IM Drop Wire products, are constructed of galvanized steel and hang on 7/16" diameter drive hook.

FOR OUTSIDE BURIED PLANTS

TERMINALS



Pedestal or pole mounted buried plant terminals are available in a range of sizes for terminating or loading pairs of buried wires, and for accommodating cables from small through the large sizes for distribution or loading purposes; for splicing cables, and for termination of cable pairs.



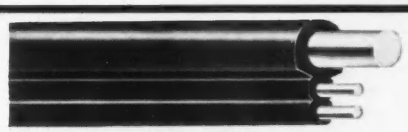
SUBMARINE CABLE
Completely impervious to moisture and resistant to mechanical stresses in underground and underwater installations. Various constructions available, as well as single or double armor.

WIRES and CABLES

DB
Direct burial wire with high-strength flat steel armoring for maximum damage resistance from farm and road machinery, rodents and insects. Meets REA specifications.

PCP
For direct burial installation using plow or trencher. Longitudinal copper shield. Double jacketed. REA specifications.

TEL-CS
For aerial, duct or direct burial installations. Two overlapping, spirally applied steel armoring tapes provide extra mechanical protection.



IM-DROP
Drop Wire IM-2-22 DW has integrated .062" messenger soft-drawn copper conductors insulated in parallel, flat web type construction with high grade polyvinyl chloride jacketing compound. Type IM 2-22 DWT has integrated .083" messenger and all-weather core of twisted conductors insulated with high density black polyethylene, color-coded with exclusive inlaid stripe.

IM-COAXIAL
IM Coaxial Cables are especially adaptable to applications requiring high, very high and ultra-high frequencies. Integrated messenger of high-strength, galvanized solid steel, conductor insulation and dielectric material is polyethylene.

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Sequential foot-marking available on many products.

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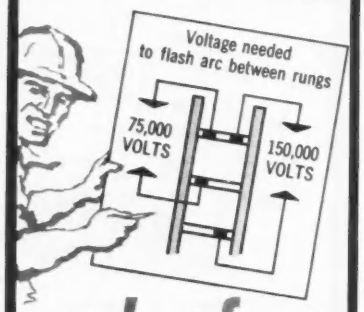
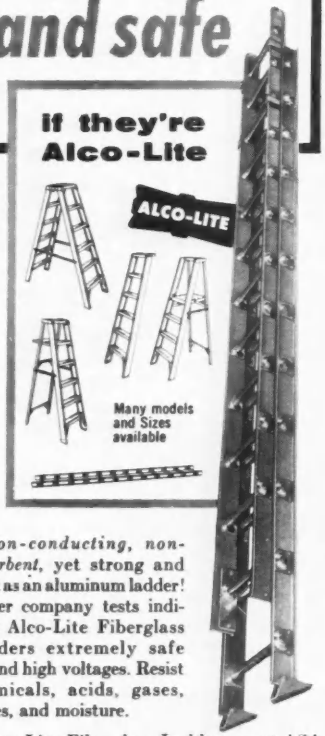


and safe



Non-conducting, non-absorbent, yet strong and light as an aluminum ladder! Power company tests indicate Alco-Lite Fiberglass Ladders extremely safe around high voltages. Resist chemicals, acids, gases, fumes, and moisture.

Alco-Lite Fiberglass Ladders meet ASA Code A14.2 for portable *metal* ladders. The wider side rails are SOLID fiberglass—not plastic covered soft wood. The wide steps and rungs are high tensile strength aluminum. More riveting and bracing throughout!

Ladders safe, strong, more rigid, have longer life, because of exclusive design and construction. Maintenance negligible. *SEND FOR CATALOG!*

Original Manufacturer of ALUMINUM Ladders

Aluminum Ladder Co.

West Darlington Street Ext.

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1886) was the son of Theodore Roosevelt's uncle, Silas Wier Roosevelt. He manufactured organs, including some of the largest in United States cathedrals. He owned factories in Philadelphia, New York and Baltimore. He invented several details of the telephone and received royalties on the automatic switch hook. He had a large interest in the Bell Telephone Company.

Unique Installation

RIGHTLY we honor the memory of Thomas Edison and Alexander Graham Bell; but their achievements effected a horrible change in American scenery, both rural and urban. Every photographer who has tried vainly to capture a beautiful scene unmarred by pole lines, knows what we lost when electricity moved in. Any volume of Currier and Ives prints proclaims the contrast.

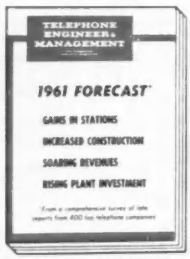
It is a phase that will pass. When the nations tire of wasting billions in nuclear threats to each other's existence, we shall listen to the wail of the aesthetes. Our hideous mess of poles, wires, transformers, and terminals will be put where they belong, out of sight.

A little company in the west is pointing the way. David C. Henny, owner-manager of the Whidbey (Washington) Telephone Company, operates about 1000 stations in a rural area in the south end of Whidbey Island. He has put his entire outside distribution plant, even the subscribers' drops, under the ground.

"I've heard of water in manholes — but this is ridiculous!"

There are neat little test-connection boxes, on breast-high posts, spaced at intervals along the roads. Otherwise, from the 400-pair cable into the Langley central office to the most remote farm house, everything is buried.

The cable is polyethylene jacketed and copper-sheathed. This weatherproof installation should result in the irreducible minimum of maintenance. Artistically, it is a glimpse into the future.



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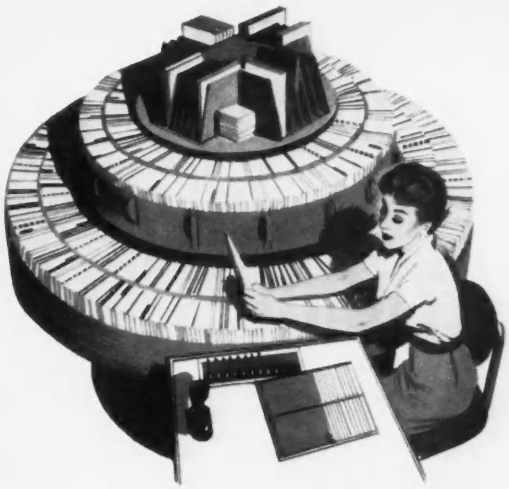

NEW ACME VISIBLE ROTARY brings line or trouble card data to users with pushbutton speed!

Without moving from their desks around a smartly modern Acme Visible Rotary, 1, 6, 12 or more users have instant access to as many as 250,000 records. No more waste steps between desks and files. No more reaching or stretching. Per hour output goes up, fatigue errors go sharply down. Send coupon for details on power and manual Rotaries, designed to telephone specifications by Acme Visible engineers working closely with telephone operations experts.

V-ANGLE LINE CARD TRAY. Usable from either end. Flips open at any card, and stays open with supported V-Angle, leaving both hands free. Measured space control keeps space ready for refiling when card is removed or changed.

ADJUSTABLE PARTITIONS IN LINE CARD TUBS are moveable. In event size of your line records is changed in the future, partitioning is easily shifted to fit your new requirements.

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World's Largest Exclusive Makers of Visible Record Systems
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Without cost or obligation, please send more information about your new equipment and systems for handling phone records. And let me have the address of the nearest representative in your nationwide sales and service organization.

We have_____ line cards and _____ cable and terminal records to handle.

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Company_____

Address_____ City_____ Zone_____ State_____

8,400 POUNDS OF TORQUE

Holan's 7500 Corner-Mounted Derrick parks at the curb and digs a hole in hard, frozen ground. Because the derrick lowers all the way to the ground, no auger extension is needed to dig a hole 8 feet deep.

...only Holan-designed derricks can take this punishment

Holan's new 7500 Corner-Mounted Derrick is one of those "in-a-class-by-itself" products.

It has to be to handle the rugged Holan 5400 Earth Borer — the most powerful derrick-suspended digger on the market. It's the only corner-mounted derrick built today that can harness the 8,400 foot-pounds of torque developed by this three-speed digger.

Coupled with the tremendous up and down feed pressures (ranging from 3600 to 5400) of the 7500 Derrick, the 5400 Earth Borer is slashing digging costs every day. That's because it positions quickly, digs up to 30" holes eight feet deep without an auger extension . . . and is powered to "bury its head" in frozen and rocky soil — then spin off at 280 rpm's.

See this derrick/digger combination — engineered as a unit by Holan to avoid body stresses and minimize derrick stresses — before you buy any derrick or digger. We'd be glad to send you literature on the 7500/5400 Unit — or on our 3750 and 6800 standard-mounted derricks and the new Holan 7700 Center-Mounted Derrick.

The Holan 7500 is the only corner-mounted derrick on the market that can handle the 8400 foot-pounds of torque of Holan's 5400 Earth Borer — the most powerful derrick-suspended earth borer built today. The 5400 has three speeds: one for hard digging, one for normal digging, and a fast spin-off speed.

Holan

HOLAN

Holan Corporation, 4100 West 150th St., Cleveland 35, Ohio Subsidiary of THE OHIO BRASS COMPANY

TELEPHONE ENGINEER
AND MANAGEMENT'S

EDITORIAL

COMMENT

"An Uphill Excise Fight"

THE HOUSE Ways & Means Committee had visitors last month, and we hope the committee will have *more* visitors before it concludes its hearings on tax revisions in general, and the telephone excise tax in particular.

Of major interest to us was the telephone excise tax testimony presented by two telephone men — *Clyde McFarlin*, president of the Montezuma (Ia.) Telephone Co., speaking for the United States Independent Telephone Association (USITA), and *Alexander L. Stott*, comptroller of the American Telephone & Telegraph Co., New York City.

Admittedly some of the arguments advanced by the industry spokesman against the communications taxes have been repeated year-in and year-out since World War II.

However, this year, in addition to stressing the "*unfair and discriminatory*" aspects of the telephone excise tax, Messrs. McFarlin and Stott presented some facts that, we believe, deserve circulation beyond the confines of the hearing room occupied by the House Ways & Means Committee.

A fact that should be of more than passing interest to President Kennedy, the House Ways & Means Committee, and anyone interested in pulling this country out of its recession doldrums, was pointed up by Comptroller Stott when he told the committee that while no one can tell how much the telephone tax repeal would increase telephone service demand, "*It is possible that it would result in very much larger use of telephone service.*"

From there, Mr. Stott emphasized that "*even if it resulted in only a modest boost of, say, 2% in residence main telephones and 5% in long distance messages, this would mean perhaps as much as $500,000,000 of additional construction. Clearly, many new jobs would be created, both inside and outside the telephone business.*"

The AT&T comptroller then pointed out that "*Even without the excise tax, telephone customers carry a very heavy tax load. In 1960, the Bell System paid over $1.8 billion in federal income and other operating taxes. This means that 23 cents out of each dollar of Bell System revenues go for income and other operating taxes, or about $48 per customer per year.*"

Montezuma Telephone Company President McFarlin emphasized to the committee that the telephone excise impose "*is an additional tax on the telephone-using public which the subscriber pays over and above the normal and usual taxes on the telephone business,*" and reported that in 1960 "*excise taxes collected from subscribers of Independent telephone companies totaled approximately $79,516,000.*"

Agreeing that it is essential that federal revenues be kept at a high level, Mr. McFarlin said "*It is our view, however, that continuation of the telephone excise tax would be no less unjust and discriminatory simply because of the expediency of federal tax revenue requirements than if that expediency did not exist. On the contrary, it is our view that where such an unjust tax is continued simply because it produces considerable revenue and is comparatively less difficult to collect than some other forms of taxation, Congress must face up to the danger that it will become irretrievably frozen into our tax structure on a permanent basis.*"

At this writing we do not know the effect of the industry representatives' words on the House Ways & Means Committee. It is clear that Washington observers who see a "*steep uphill road*" for repeal of the telephone excise levies have pegged things about right, and we have no argument with their conclusion.

However, we do believe the steepness of that uphill road can be reduced if more telephone industry members and more telephone subscribers present the facts on the telephone excise tax to their Congressmen, just as Mr. McFarlin and Mr. Stott presented the facts to the House Ways & Means Committee.

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Prolong the life of telephone cables with "tailored-for-the-installation" coverings from

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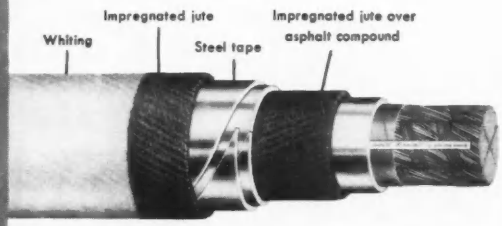
Most lead covered paper insulated telephone cables do not normally require additional protective coverings over the lead sheath. However, under certain environmental conditions, additional protection must be added to insure a full life expectancy of the cable. Kennecott-Okonite can supply these coverings, each designed to give positive protection against various environmental conditions.

A Kennecott-Okonite representative will recommend the ideal telephone cable covering to fit your particular needs. Call or write: The Okonite Company, Kennecott Wire and Cable Division, Phillipsdale (Rumford 16), R. I.

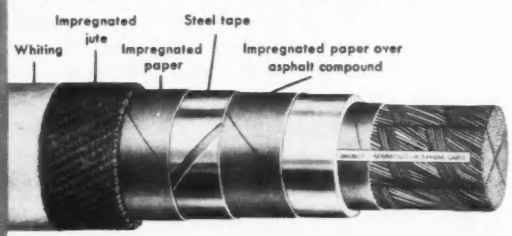
METALLIC COVERINGS

(Suitable for Direct Burial)

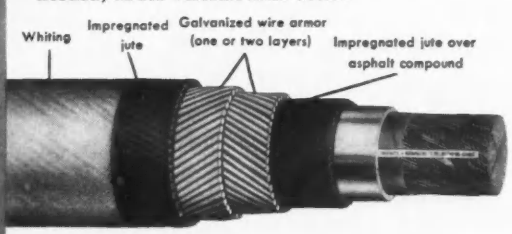
DOUBLE TAPE ARMORED CABLE—Provides substantial protection from mechanical damage; greatly reduces low-frequency inductive interference from adjacent power lines.



GOPHER-PROTECTED CABLE—Offers less mechanical protection than double tape armor, but completely prevents damage by gnawing rodents.



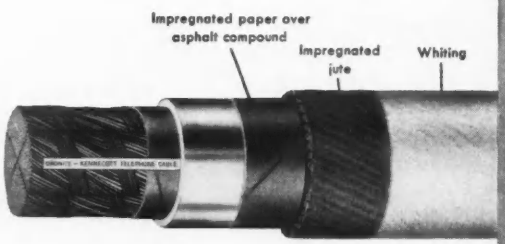
WIRE ARMORED CABLE—Affords maximum mechanical protection and greatly increases the longitudinal strength of the cable. Recommended for the most severe service conditions, such as for submarine cable, or where longitudinal strength is needed, as for vertical riser cable.



NON-METALLIC COVERINGS

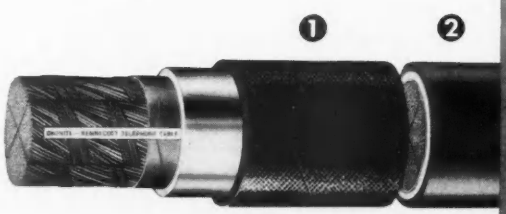
(Usually Installed in Ducts or Conduits)

JUTE-PROTECTED CABLE—Furnishes a minimum of mechanical protection but gives some protection against chemical and electrolytic corrosion.



1. **NEOPRENE-COVERED CABLE**—Contains a combination of neoprene compound and fibrous tapes which are vulcanized to form a tough moisture-resistant jacket that is firmly bonded to the lead sheath.

2. **PLASTIC-COVERED CABLE**—Contains a homogeneous layer of polyethylene or a polyvinyl chloride compound extruded directly over the lead sheath.



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TELEPHONE ENGINEER
AND MANAGEMENT'S

WASHINGTON

OBSERVATIONS

AT&T Outlines Plans For "WADS"

WIDE AREA DATA AND TWX SERVICE

Plans for Wide Area Data and Teletypewriter service, to be known as 'WADS,' and similar in concept to Wide Area Telephone Service, outlined by AT & T in tariff filing for interim developmental plan . . . WADS to be offered between wide service areas generally similar to WATS, and will also provide means by which customers can make calls to TWX stations . . . Cannot be offered until conversion of TWX network to dial operation, now expected in fall of 1962.

By ROLAND DAVIES and FRED HENCK

PLANS for a wide area data (and teletypewriter) service, to be known as "WADS," for wide area data service, and similar in approach to wide area telephone service, were outlined last month to the FCC in a tariff filing by the American Telephone & Telegraph Co. Long Lines Department.

The action came with the filing by Long Lines with the Commission of an original tariff 252, providing for an interim developmental line switched teletypewriter service.

Long Lines Administrator Rates & Tariffs L. E. Eastmond, in the letter of transmittal, reported that "We are giving active consideration to an offering of a new form of line switched data and teletypewriter service on a much broader basis than the developmental service offered" in last week's tariff filing. Unlike that service, he continued "WADS will not be limited to service between specified cities or groups of cities, but will be offered between wide service areas generally similar to those established for WATS. WADS will also provide means by which customers will be able to make calls to TWX stations.

"The offering of WADS cannot as a practical matter be made until our present teletypewriter exchange service has been converted to dial operation. Present plans are for this conversion in the fall of 1962.

"Our plans for the offering of a service such as WADS recognize that there is a substantial demand for a service in the data and teletypewriter field similar to the demand for WATS in the field of telephone communications. In addition, such a service will meet the special needs of customers who have extensive switching requirements which are presently met by private line teletypewriter service with switching systems located on customer premises.

"Such systems involve substantial costs, and to meet the growth in switching requirements in this way calls for disproportionate complexity in design, installation, and construction. WADS will permit performance of the necessary switching functions by means of equipment located on telephone company premises as part of the nationwide switching systems.

"Within the limitations set forth" in last week's filing, "this developmental service is a precursor of the kind of service proposed for WADS. The rates are based on preliminary analyses of the factors underlying the proposed WADS offering and are not based on costs of the particular facilities which may be used in the developmental offering. The preliminary costs analyses for WADS are being furnished separately. This developmental offering will afford an opportunity to obtain valuable experience with many of the service and operational features of WADS before offering such a service on an expanded basis."

Mr. Eastmond, discussing the service offered under last months filing — submitted to become effective Thursday, June 8 — said "This developmental service provides for the use of special facility arrangements, including access lines between the customer's premises and telephone company central offices, to enable cus-

tomers to communicate by means of teletypewriter equipment provided by the telephone company. The service will permit customers to set up connections through central office switching facilities on telephone company premises. The service is designed to operate at a speed of 100 words per minute.

"Service is available only between stations in certain specified cities. The service is, of course, offered subject to the availability of facilities. Some lead time may be necessary to provide the special facility arrangements for this offering.

"Two classes of service are offered. Full time service will permit unlimited calling between specified groups of cities at a flat monthly charge for each sending access line. Measured time service will permit calling between specified groups of cities for a period of 10 hours of accumulated time per month at a flat monthly charge with additional use at hourly rates."

In the initial filing, as a measure of the rates, service will be available to 64 specified cities in 23 states and the District of Columbia. Full-time service to all of these cities would cost at monthly rates ranging from $410 in Little Rock, Ark., to $490 in Jacksonville and Miami, Fla., and New York. Measured service base charges for the first 10 hours would range from $164 in Little Rock to $178 in the Florida cities and New York, and the additional hourly rates would run from $6.10 to $7.70 each, respectively.

The tariff also shows rates from each of the cities to a somewhat smaller service area, eliminating the more distant points, ranging from $305 for full-time and $143 for base measured service in Miami and Paducah, Ky., to $475 for full-time and $176 for base measured service in Los Angeles, San Diego, and San Francisco, Calif.

For receiving-only access lines, under the developmental tariff, the charge would be $40 per line per month when furnished in conjunction with and on the same premises as a sending-only or combined sending and receiving line. When furnished at premises where a sending-only or combined sending and receiving access line is not provided, the first receiving-only access line would cost $100 a month, with a charge of $40 monthly for each additional receiving-only access line. An installation charge of $25 applies for each access line, whether sending or receiving only, or combined.

Supporting material made available to the FCC brought out that under WADS, customers will have a choice of six service areas, the largest of which will cover the entire U. S. except for Alaska and Hawaii. Calls from WADS stations to other WADS or TWX stations beyond the specified service area can be made over WADS access lines but will be billed at TWX message rates. All messages from TWX stations to WADS stations will be billed at TWX message rates.

Service area arrangements are to be similar to those for WATS, except that the home state will be included with each WADS service area, and, of course, teletypewriters will be used instead of telephones as one measure of service availability. The other measure will be area in square miles, as is the case with WATS.

The offering contemplates customer dialing of all WADS messages. Telephone company operators ordinarily will not be involved in handling such messages. Collect and conference arrangements are not included in the WADS offering. Such messages will continue to be handled by operators and charged for at TWX rates.

All WADS to WADS service, it is pointed out, will be 100-speed. Means will be provided for shifting to 60-speed to or from 60-speed TWX stations, pending the conversion of TWX to 100-speed operation.

It is felt that customers whose calling is concentrated between two or three points probably will prefer to continue to take private line service. WADS will provide other customers, who have substantial need for teletypewriter communication to scattered points, service advantages similar to those now available with private lines between fixed points, the supporting material noted.

A considerable number of private line teletypewriter customers, the material continued, have heavy usage requirements to a large number of points. Some of them also have requirements for high-speed and for special service features peculiar to their particular kind of business.

Usually, these customers now have networks of multipoint private lines with message switching centers at one or more of their locations. As the requirements of these customers grown in volume in complexity, AT & T commented, it has become more and more evident that these switching systems on the users' premises are cumbersome and involve substantial costs for space, power, and other items. The cost of still bigger and more complicated systems to take care of growth will be increasingly undesirable as compared to service through a switching system on telephone company premises, AT & T declared.

Among customer advantages of WADS, it was stated, are unlimited capacity for growth, with addition of access lines all that is required; increased reliability, through the availability of the nationwide network; switching center savings; improved speed, compared with multistation lines in large switching systems where individual stations have to wait their turn; ready availability of service, without need for private line system engineering and installing, once WADS is generally available; and ability to reach other customers, with all WADS and all TWX customers being accessible.

Compared with TWX, AT & T continued, the cost per minute of WADS use generally will be lower for customers who have sufficient requirements to make efficient use of WADS service, and the speed will be higher, 100 words per minute compared with 60 for TWX.

For the telephone company, advantages cited include improved utilization of intercity lines, since WADS will combine services for many customers; facilitated maintenance, since the need for special maintenance practices required on private lines and maintenance work for switching systems on customers' premises will be

Please turn to page 48

TELEPHONE ENGINEER
AND MANAGEMENT'S

REPORT

FROM THE FIELD

A New Service Observation System

NEW
SMALLER COMPANY
HELPER

A Service Observation System incorporating the features described by this article has been in everyday use in Lorain, (Ohio) Telephone Co., exchanges for about two years. The low-cost system has demonstrated the value of a Service Observation System for medium and small size telephone companies (Part One of this article appeared in the May 15 issue of TE&M.)

By R. H. HERRICK
Chief Engineer, Lorain (Ohio) Tel. Co.

AVAILABILTY of the Service Observation System to the various departments demands that each department have a Control Unit located convenient to the respective department supervisors. Thus, a Control Unit for traffic department use should be located in or near the chief operator's office, and possibly the traffic superintendent may want another Control Unit in his office for his own use. Also, as desired, the general manager, the commercial office manager and the repair department supervisor may have a Control Unit in or near their respective offices.

Control Units

THIS sounds like a big order considering our bogie of sharply limited costs. However, there is a practical answer. A range of Control Unit sizes should be available to allow choice of the smallest size, and thus the lowest cost Control Unit for the particular use. Further, the System design should allow initial installation of a limited number of Control Units, if desired, with provision for subsequently adding Control Units, one or more at a time, when such can be afforded.

To illustrate the advantages thus offered, the chief operator having, say, 18 operator positions of interest would be provided with a 20-selection Control Unit, which might be included in the initial installation. The Commercial Manager, with a total of 10 or less monitorable lines and pickup microphones, would have a 10-selection Control Unit which may be either provided initially or at a later time as may be desired. The General Manager, having an interest in both traffic and commercial activities, might have a 30-selection Control Unit which could also be installed either initially or later.

With several users having access to the Service Observation System, it is a practical necessity that guards be built into the system design, to prevent interference between the various users. Experience indicates that a mere "in use" warning lamp is not sufficient — even supervisors can be careless! Accordingly, the system should incorporate a positive "lockout" provision, as a standard feature. Such lockout should function automatically to "kill" all Control Units except the one which may be in use at the moment. The "in-use" lamp should also be provided, however, as assurance to a locked-out observer that his "dead" Control Unit is not a system fault.

Since use by the commercial and plant departments would require the monitoring of telephone lines and even the use of (inconspicuous) microphones placed at commercial office counters or desks, the system design must provide for universal use of any of the individual selection circuits with a telephone line or microphone, as well as with a switchboard position.

Effective service observation depends upon the accomplishment of monitoring with no indication whatsoever to the person being observed. Experience proves the necessity for extreme design precautions against even the slightest clicks, "thumps," or changes in transmission or background noise when a position or line

is selected for monitoring.

The observer must have the means of selecting any desired position, line or microphone he chooses to monitor, and of changing readily to any other as desired. There should be a positive indication of the particular position, line or microphone being observed. Experience shows preference for a (white) lamp individual to the selection.

"Routined" Observation

IN GENERAL, a person doing a routine job will be fully conscious of a conversation within his hearing. Why not, then, superimpose service observation upon the routine of paper-work and thus obtain some monitoring time as an "extra" dividend?

It works. An automatic observation provision, designated "routined-observation," is incorporated into the system used by Lorain Telephone Company. It is started by operating a key on the Control Unit, and will successively select the monitorable positions, lines or microphones in turn, dwelling on each for 15 seconds and automatically skipping the positions not occupied or the lines not in use at the moment. It may be stopped, at will, or it may be halted on any position, line or microphone on which detailed monitoring may appear desirable.

This feature has received such enthusiastic acclaim within The Lorain Telephone Company that it was given a place in the list of objective Service Observation System features. However it is not "necessary" to effective use of the system, and should therefore be considered in the optional category. It may be omitted if the telephone company finds it desirable to cut costs to a minimum.

A service observation operator working at a conventional Service Observation Board habitually employs a headphone as the listening medium. This is acceptable and, in fact, desirable for the *full time* service observation operator.

However, the smaller-company Service Observation System is used differently. The observers must be able to "pick up" their monitoring duties for short periods. A loudspeaker, rather than a headphone, is a practical necessity for this type of observation to avoid the nuisance factor of lifting a headphone or headset and adjusting it to the head for each relatively brief monitoring period. The greater comfort and freedom of movement provided by the loudspeaker are contributory advantages, also.

A major potential of service observation lays in its educative, largely corrective, application. Corrective action is most effective if it can be taken immediately after an offense is observed. Thus the System should include provision for the observer to talk directly with the person being observed. Only a simple key operation should be required, and it should only be necessary for the observer to speak at normal conversational level with his voice directed toward a micro-

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phone mounted in the face of the Control Unit.

Provision should be made for reply by the person being corrected; such reply should be heard in the observer's loudspeaker at a level similar to that received while monitoring. It should be noted that this feature allowing the observer to converse with the person being observed, should be limited to the monitoring of operator positions; it is usually not desirable for application to lines or microphones.

Handling Corrections

SINCE it is poor policy to correct an operator in the hearing of a subscriber, particular care should be exercised by the observer to avoid such a situation. It will usually be evident by oral observation when correction should be avoided. However, a more positive warning is desirable. It is practicable to equip the System with a "detector," applicable to most types of position circuit, which will show a (red) lamp warning indication when the operator at an observed position has her talk key open.

This, of course, is not an absolute indication that the operator is actually connected with a subscriber, since she may have a talk key open on an idle cord circuit. However, it does serve as a positive warning to the observer to satisfy herself that there is no listening subscriber when she voices a correction. This feature is a valuable auxiliary but it is not a necessity. Accordingly, it should be considered as an option which can be omitted if desired to reduce cost.

Some switchboards, particularly of the "cordless" type, require that an operator stand by with the talk key of an idle link open, as in indication to the allotter that she is ready to receive a call. With such a switchboard, an operator who tends to shirk her fair share of the load can "neglect" to open a talk key. The (red) warning lamp above noted offers an effective means for discovering such operators and, if necessary, for accumulating evidence preparatory to disciplinary action.

It is a recognized principle of education that demonstration will "get over" a point much more effectively than mere description. This is particularly true when the educative efforts are aimed at the correction of a fault of which the subject is not conscious, or one he is unwilling to admit.

Many employes cannot or will not recognize a fault unless they actually have it demonstrated to them. Others tend to be careless, but will be kept in line if they can be convinced by demonstration that their work is watched and their faults pinpointed.

For all such employes, recording facilities in connection with the Service Observation System offer immeasureable assistance toward correction of faults and improvement in attitude on the job. A recording of an employe's fault, subsequently played back to him during an interview, is a positive demonstration that he actually commited the fault. He cannot escape recognition of his error, and the played-back recording proves more effective than any other method of obtaining his understanding and cooperation.

Accordingly, provisions for recording and playback should be made as an important part of a Service Observation System. It should be possible for the observer to start recording instantly as the need becomes apparent; thus the recorder should be on operative standby whenever the system is "turned on," and should require only a simple key operation to activate it. The system should also include provision for the observer to add to any recording such pertinent details and remarks as may be desired.

Strictly, recording/playback facilities are not a "necessity," since much of the basic value of the Service Observation System can be obtained without such provisions.

However, the recording/playback feature is such a valuable educational and disciplinary tool that the maximum of encouragement should be offered toward its provision at a later date if not economically possible at the time of initial system installation.

Our investigation showed that a universal circuit could be designed, requiring only the inclusion of two inexpensive keys and some simple wiring in each Control Unit, which would provide for use of any of the several commonly-available types of recorder/playback devices on the market. It was felt that this universal circuit should be a standard provision in the Service Observation System, thus paving the way for ready use of a recorder but not including the recorder as an inherent part of the System.

This approach offers the flexibility which allows a telephone company to purchase the basic system with a minimum of expense, delaying purchase of the recorder/playback device for a more opportune time if desired and, in any case, offering a choice of recorders within a wide price range depending upon convenience features felt desirable.

For example, simple "home" type tape recorders are available at relatively low cost. These are quantity produced devices adequate in ruggedness and recording capability for this application, but having mechanically-linked record and playback controls on the device itself. Such a recorder must be located within easy reach of the observer, since recording can only be started by manipulation of the controls on the recorder/playback unit.

At the other end of the price range is the "dictating machine" type of recorder/playback unit. This type is designed for full electrical control of its record, rewind and playback functions, and may be handled completely from the universal control circuit keys built into the basic Service Observation System Control Unit as noted above.

Such provision not only offers greater convenience than control from mechanically-linked knobs or push-buttons on the recorder itself, but also permits more prompt start of recording when desired during observation. Incidentally association of a dictating machine with the Service Observation System need not interfere with its functioning for dictation purposes.

"Continuous Indication"

ONE of the questions asked of chief operators and traffic supervisors during our inquiry period was,

"Would you feel it desirable to have before you a continuous indication, a (green) lamp for example, of all positions occupied?" The answer was "Yes." Accordingly, this feature was included in our list of objective system capabilities. However, we had some reservations as to its "standard" or "optional" status, but the question has been settled positively by The Lorain Telephone Company's observers, who feel it is so valuable it should be considered a standard provision.

Last noted, but far from least in importance, are those features of the Service Observation System which protect the traditional secrecy so dear to the hearts of all true telephone people. It is necessary that a Service Observation System provide every reasonable precaution in support of the long-established industry rule forbidding the monitoring of telephone conversations except when necessary for good and sufficient reasons, and then only by persons authorized and trusted to maintain their observations in complete confidence.

This demands that the "power" switch on every Control Unit be equipped with a high-grade lock, and that the associated switching equipment be suitably protected. It is equally important that the observer be able to quickly silence the loudspeaker when an unauthorized person approaches within hearing distance. An optional auxiliary provision, commended by experienced observers, disables the loudspeaker automatically following opening of the room door.

"A Sales Opportunity"

THE Service Observation System described in this article was conceived and developed around the needs of telephone companies, but we suspect the alert commercial manager has already seen its possibilities as a sales opportunity. Other utilities (electric, gas, water), banks and department stores, to name a few, employ people who deal with the public. These organizations, like the telephone company, must maintain good public relations. Thus, they have the same need for service observation that the telephone company has. A Service Observation System of the kind described is equally applicable and equally effective to satisfy their needs.

For use by such organizations, the position-monitoring facilities so important to the telephone company will be limited to the PBX operator position or positions. The major use will be to monitor telephone lines and, by use of suitably placed miniature microphones, to monitor the direct conversation of employes with the public at cashiers' counters, interview desks, retail sales counters and other locations where employes deal directly with customers.

The telephone company is in an ideal position to supply an Observation System at a monthly rate, for use by the subscriber's supervisors and manager. Here is a worthy addition to the rapidly broadening field of telephone company sales opportunities.

"Easy Installation"

INSTALLATION of a Service Observation System poses no problems. Most telephone companies employ installers and/or equipment maintenance personnel whose regular duties have prepared them to read a connection diagram and to make simple switchboard cable connections accordingly.

The Service Observation System should be designed for an extreme of installation simplicity, to allow installation by local telephone people. Installation procedures should be straightforward, employing only such techniques as are generally familiar to the plant people of the smaller telephone companies.

The monitoring connections to the position telephone circuits and the lines to be observed should be merely "bridging," the simplest possible means of connection. The "position occupied" or "line in use" feature requires the addition of a relay in the position transmitter supply circuit or in the line circuit, respectively, but this should introduce no installation problem since such additional relays are easily mounted and connected.

If the "Talk Key Operated" feature is provided, it might be necessary to provide an added capacitor in the position telephone circuit; this, also, would require only the simplest mounting and connecting procedures.

Maintenance of the system should be within the capabilities of plant people in the smaller telephone companies. The system can and should be designed to use relays and other switching equipment of types commonly used in the telephone plant. Amplifiers, necessarily a part of the Service Observation System, may be unfamiliar to the smaller company plant people. However, the amplifiers are of the simplest type, requiring but very little maintenance, and that of a kind readily accomplished by inexperienced people under the guidance of the detailed instructions which should accompany the system.

We conclude with the report that a Service Observation System incorporating the features described, has been in everyday use in The Lorain Telephone Company for about two years. This system[1], designed to the low cost objectives noted, has demonstrated the practicality and value of a Service Observation System particularly for medium and smaller-sized telephone companies. The Lorain Telephone Company's sales department is also promoting use of the Service Observation System by those of their subscribers who have service observation needs. — *R. H. Herrick.*

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[1] *Similar Service Observation Systems offering wide choice of sizes and options are made by The Lorain County Radio Corporation and distributed by Buckeye Telephone & Supply Company, Columbus, Ohio.*

A TELEPHONE ENGINEER AND MANAGEMENT REPORT ON

PROTECTION

Let's Look At Telephone Protection Practices

CHAPTER TWO OF A NEW TE&M REPORT

Adequate information on the job at the right time will help you avoid booby traps that otherwise can prove to be at the least, embarrassing; at the worst, fatal; and in most cases, expensive. This practical, unique discussion explains some basic steps that any telephone man can take which can (A) lead to decreasing the severity and frequency of normal risks and (B) assist in preventing the creation of new risks. (Continued from the May 1 issue.)

By T. DeWITT TALMAGE

SOME FUNDAMENTAL aspects of protection and safety practices of practical concern to all telephone workers were outlined in Part One of this article. None will dispute that this subject of safety is a vital, ever-present problem. As such, safety is of elemental and continuing importance to every telephone organization — large and small — in every location.

For these worthwhile reasons, this part of the discussion will continue the explanation of some interesting ramifications of each telephone company's obligation to be adequately informed about essential standards, codes, and approved practices that apply to, and definitely affect, the communication industry and its customers.

In an effort to contain this discussion within manageable proportions, emphasis will be placed on basic information.

It is easy to say that as a general rule, the use of appropriate standards in any business will result in advantages that are difficult to achieve in any other way. However, trying to apply this general rule to a specific business and then using this rule effectively in the individual parts of that business is seldom as simple as it sounds. Very often, for this policy to be as successful as it can and should be, something more is required than just routine application of a superficial acquaintanceship with broad guidelines.

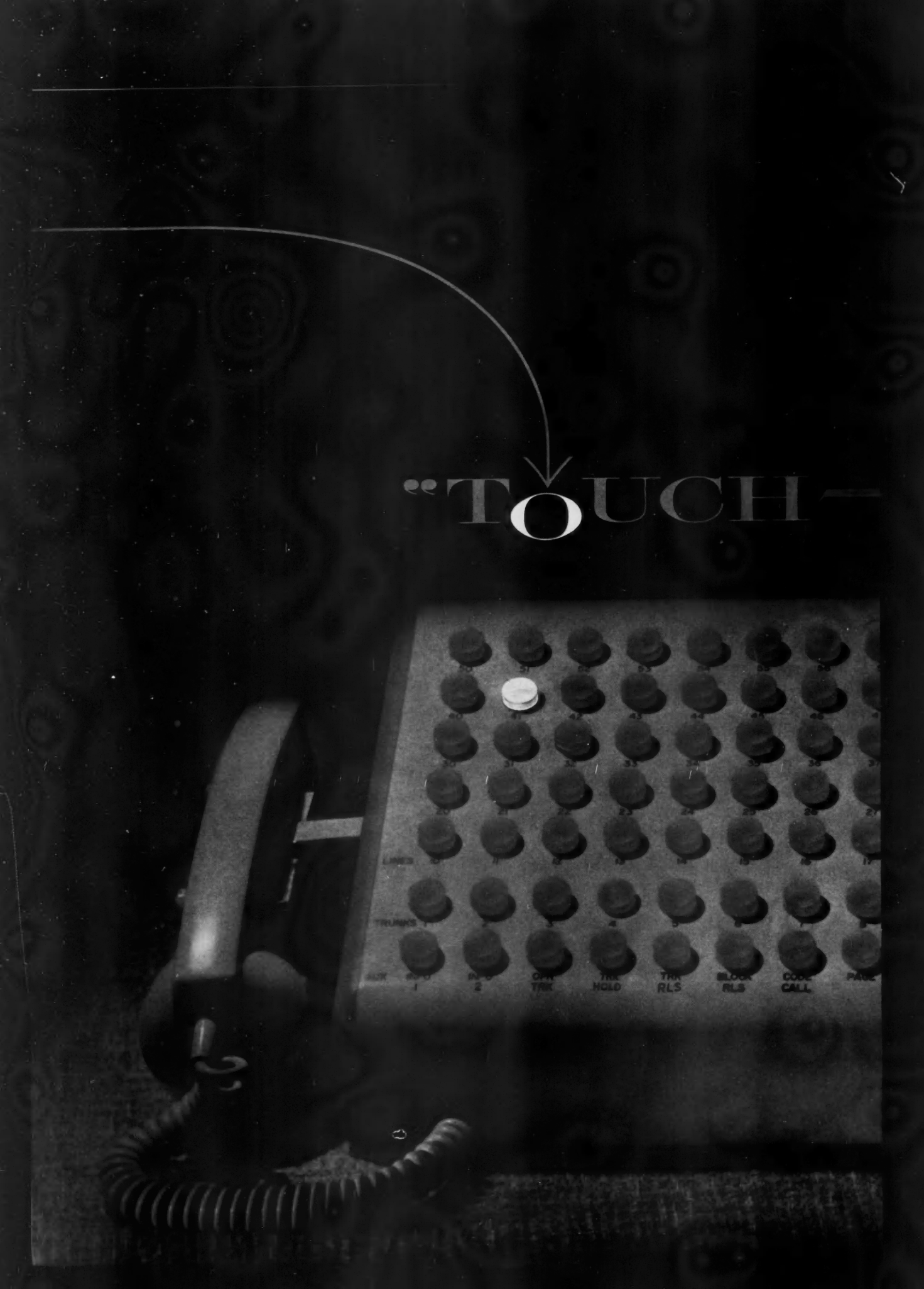
Where safety is involved, it pays off to be conservative and to be sure of one's facts. Furthermore, there are times when the intelligent establishment and use of plant standards and safeguards require an intimate understanding and appreciation of certain underlying principles — simple and few as they may be. This is especially true when some actual cases encountered in practice prove to be exceptions to the general rule.

In the foregoing respects, it is important to remember that one of the chief precautions that must be taken is to *make sure that one's knowledge of safe conditions and safe working methods does not have any serious gaps between major facts or missing links between essential principles.* This can be an oversight that alone will justify re-appraising a company's methods of operations — yes, and each employe's work methods — to make sure no blind spots of any consequence are permitted to exist.

Objective Goals Of Study

SUCH a re-appraisal study can indicate: (a) how widespread these advantages (stemming from the use of standard practice) can be, (b) the degree of the beneficial effects that these advantages may have on telephone service, and (c) the related monetary value of these advantages.

Certainly in the area of telephone protection and safety, the potential goals and the possible results are sufficiently attractive to justify critically reviewing such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matters at regular intervals. This article, therefore, is not only a reminder of the wisdom of so doing, but in addition will suggest some points that are worth considering when making such investigations.

On the other hand, it should be fairly obvious that ignoring — accidentally or otherwise — established minimum standards can mean the creation of unnecessary hazards and risks and even making existing marginal situations more of a gamble. To do this simply does not make good business sense because how can we expect to gain in the long run if we unwittingly (because of lack of accurate or sufficient information) become a party to increasing the severity and/or the frequency of normally encountered risks or to creating new risks?

Experience indicates that only persistent vigilance can control and eliminate unsafe conditions and unsafe working methods. Typical guideposts that can be used in checking some of such matters are included in this discussion. Additional up-to-date information will be found in the references and footnotes cited throughout this article, as well as in the appended list of "Selected Reading References."

One of the more encouraging aspects of the telephone protection and safety problem is the fact that there is some helpful information in existence. Once its whereabouts has been located,[8] most of it can be obtained on relatively short notice and at small, if any, cost.

It follows then, that in the light of today's available knowledge of communication protection and safety techniques, there should be little excuse for being unaware of many of the advancements that have been made during the telephone utility industry's life span of over 31,000 days.

If this is true, what is the reason that there is a dearth of certain basic, practical information in spots where its use is direly needed?

Several reasons for this unfortunate and unnecessary condition that have been encountered singly or in combination with each other will be examined in this discussion.

One of the more prevalent but apparently less obvious reasons for the scarcity of adequate information on the job stems from the fact that it is not possible to get complete information from any one source. *If* this could be done, one of the more helpful features of this article, the inclusion of titles of selection references and their source of issue, would be less useful and perhaps even unnecessary.

Available Information Is Scattered

ADMITTEDLY, the sources of information on the present-day status of the art and science of telephone communications are scattered. While this may be considered an awkward situation by some, still, with a judicious amount of properly applied enterprise, this barrier can be overcome without undue strain on one's anatomy or purse strings.

Notwithstanding this saving feature, the stubborn fact still remains that many sources must be tapped in order to get an adequately balanced understanding — a "working understanding" or a "working knowledge," if you please — on some subjects. This is especially true when one attempts to acquire sufficient background and perspective to avoid the booby traps lurking in a surprising number of day-to-day telephone tasks that can — and will, if you are not careful — turn out to be (a) at the least, embarrassing; (b) at the worst, fatal; and (c) in the majority of cases, expensive.

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If a general illustration is required to demonstrate how many widely scattered sources are actively furnishing pertinent communication information these days, the proof is as near as the pages of this and past copies of the *Telephone Engineer & Management* magazine that regularly contain and announce the latest additions to the present supply of data.

More proof is as close as your nearest public library where you can consult the appropriate sections of the Industrial Arts Index, Applied Science & Technology Index, the Engineering Index, and similar listings of communication articles released at periodic intervals.

If additional proof is still needed, such proof is no further away than your local mail box through which, *in response to your request*, you may receive direct from the sponsoring and issuing organizations, titles, descriptions, and sometimes informative digests of current information available in a variety of forms.

It should be kept in mind at this point that the type of information needed by the alert and forward-thinking telephone company whose self-interest is concerned with tomorrow's as well as today's conditions should not be restricted to just well-known codes and standards, or, in the case of training new telephone employes, re-

Please turn to page 34

[8] *If one of your problems is to learn the important job of how and where to "look up" information quickly, easily, and efficiently, there is a highly recommended book that will answer your needs. Get a copy of Robert W. Murphy's very helpful book entitled: "How and Where to Look It Up — A Guide to Standard Sources of Information," published in* 1958 *by the McGraw-Hill Book Company,* 330 *West* 42*nd Street, New York* 36, *N. Y. This* 72*-page book is designed to show anyone — layman or expert, beginner or veteran, regardless of educational background — how to find almost any kind of information, technical or non-technical. In other words, this* $15.00 *book tells you in simple terms how to find the information you must have on your job, where to find it in the shortest possible time, and equally valuable, how to evaluate and use it.*

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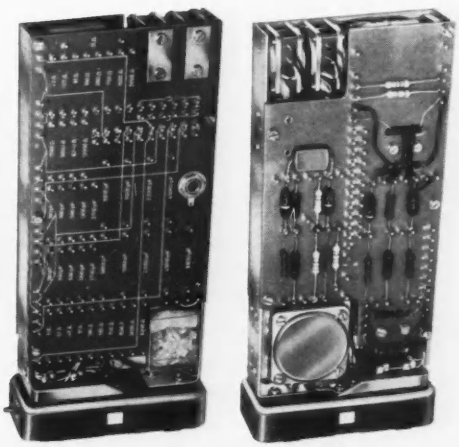

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"Telephone Protection Practices"

(Continued from page 30)

stricted to run-of-mill educational pamphlets and technical instructional literature. In addition to all of this, the task of mastering your job problems to the point where *you control the situation* and your problems do not "hem you in," requires familiarity with certain categories of other fundamental information that deserve to be more widely and better known in greater detail.

These categories include, but are not necessarily limited to, such invaluable basic aids as applicable laws, ordinances, regulatory commission construction rules and regulations, scientific and technologic papers, a variety of committee reports and recommendations, specifications, guides, and reference bibliographies — just to mention a few.

Straying slightly from our main theme, no one should overlook nor underestimate the direct benefits that can be steadily derived from a more common but very valuable source of information. All telephone equipment manufacturers, suppliers of auxiliary telephone gear, tools and test instruments, etc., issue, from time to time, telephone bulletins, circulars, catalogs, installation and maintenance instructions, and handbooks as well as many related special and miscellaneous publications. If these ordinary sources of information which pass over the telephone executive's desk were, before filing, given *wider distribution or circulation* among affected employes of the telephone company, the sum total of all this useful data would be made available to those who could profit most from it.

For the sake of efficiency, a *systematic* effort should be made to get correct and complete information and instructions into the actual hands of the telephone man who is personally required to use them and produce concrete results — be he the chairman of the company's board of directors or the newest apprentice or trainee. (EDITOR'S NOTE: This is a subject so important that it deserves all of the attention you can give it.)

How To Start Helping Yourself

IN VIEW of the numerous references available from a multiplicity of sources that bear on the main topic of this discussion, how does one start to get the precise information he needs on his job?

One way of starting on this do-it-yourself-and-you-know-that-it-will-be-done-right project is by continuing to use the specific example mentioned in Part One of this article, the "Code for Protection Against Lightning," which was jointly sponsored by four nationally- and internationally-known organizations. Accordingly, the first step is to obtain and *study*[9] a copy of this Code. The source of this Code is given in reference (7) appended to this part of the discussion.

Now one might reason, even in advance of reading the Code, that if these four service organizations could produce such an excellent treatise on one phase of this subject, perhaps they have done the same on other phases of interest to telephone companies. If you did think this, you would be right. Because they have done just that.

The second step to take, therefore, is to request and secure the latest copy of the index of *all* the codes and standards, and closely associated publications issued by the following four sources: (1) the American Institute of Electrical Engineers, 33 West 39th Street, New York 18, N. Y., (2) the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass., (3) the American Standards Association, Inc., 70 East 45th Street, New York 17, N. Y., and (4) National Bureau of Standards, Washington 25, D. C.

Step two can be accomplished in a straightforward manner, of course, by putting your request either in a letter or, if more convenient, on a 3-cent government postal card. If your request is written in longhand, be sure that it is legible — even if you have to print it. In any event, do not forget to include your mailing address in its entirety.

Do It The Easiest Way

THE main points to be emphasized here are that (a) your request does not need to be put on a company letterhead if it is not conveniently available and (b) your request does not need to be written by typewriter. *Consequently, anyone can sit right down now and order his own personal copy of these enlighting indexes without waiting for somebody else to order it for him.* The suggestions in this paragraph should clear the way for many to get this useful data much sooner than would otherwise be the case.

The indexes and publication lists are supplied in reasonable quantities at no cost from sources (1), (2), and (3) given in the third previous paragraph. However, there is an exception to this no-cost arrangement in the case of source (4), which is the National Bureau of Standards.

The list of the Bureau's publications is such a lengthy one that it requires two bulky circulars to contain it. The first circular, No. 460, is 375 pages in length and lists the Bureau's publications issued from 1901 to June 30, 1947. The other is the Supplement to NBS Circular 460 and is officially called the "Supplementary List of Publications of the National Bureau of Standards, July 1, 1947, to June 30, 1957," and is 373 pages in length. The total price for these two NBS circulars is $2.75.

The publications of the Bureau are distributed principally by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The NBS Circular 460 and its Supplement can be purchased only from the Superintendent of Docu-

[9] *Paradoxical as it may seem, studying can be made much easier by following the suggestions in the book entitled, "Study Is Hard Work," by Wm. H. Armstrong. 167 pp. Published in 1956 by Harper & Brothers, 49 East 33rd Street, New York 16, N. Y. Price* $3.00.

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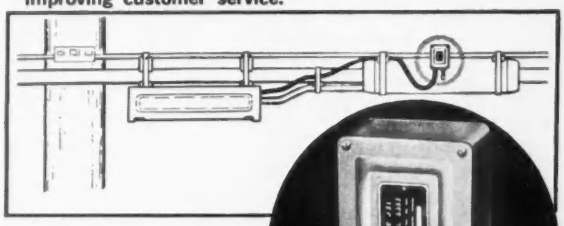
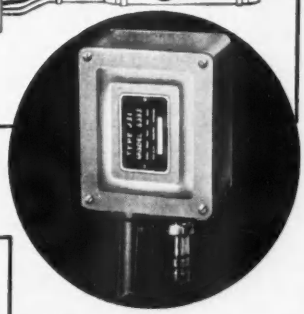
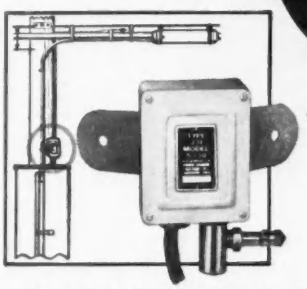




Cable Mounted
TYPE J31-5333



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- The Pressure Guard reduces cable maintenance costs and improves customer service at very low cost.
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SPECIFICATIONS

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Field Adjustment Range ..... 0 to 10 PSI
Factory Setting ..... 2 ±¼ PSI on falling pressure
Pressure Response ..... 4 ±½ oz.
Proof Pressure ..... 30 PSI
Electric Rating ..... 0.01 amp 100 V DC
Load Resistor ..... Carbon composition 270,000 OHM 1 watt
Drop Wire ..... 6' Type SJO#18 stranded 2.0 conductor
Pressure connection: ⅛ NPT (⅛ x ⅛ elbow provided separately; usually not required with direct sleeve mounting).

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2171	60 Cycles to 4 Kilocycles	30 Cycle or 50 Cycle Filter	−68 to +32dbm	± .5db −80 to +32dbm 300 Cycles to 4 Kilocycles	**30 CYCLE FILTER** 6db— 35 Cycles 60db—250 Cycles
2174A	300 Cycles to 400 Kilocycles	50 Cycle or 100 Cycle Filter*	−68 to +32dbm	± .5db −80 to +32dbm 300 to 400 Kilocycles	**50 CYCLE FILTER**** 6db— 60 Cycles 60db—450 Cycles
SPURIOUS RESPONSE: Below 60db LOW INTERMODULATION: Below 60db POWER REQUIREMENTS: 115 V. A.C.—50/60 Cycles. WEIGHT: 28 lbs.					**100 CYCLE FILTER** (STANDARD) 6db—140 Cycles 60db—900 Cycles

* Including a wider filter and demodulator for monitoring SSB, AM and FM signals.

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BELL TELEPHONE SYSTEM

ments. These two comprehensive Circulars, like other government publications from this same source, will be mailed to you promptly upon receipt by the Superintendent of your remittance — but not before. (*To be continued.*)

(*Editor's Note: — The next installment of Mr. Talmage's article will discuss how easily available facts can be used to overcome certain stumbling blocks encountered in the telephone industry.*)

Selected References

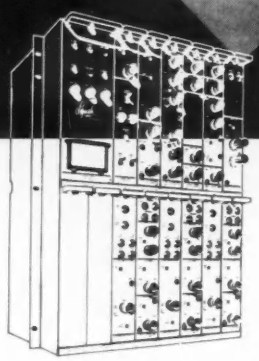
[7] "Code for Protection Against Lightning," U. S. Bureau of Standards Handbook 46, issued December 10, 1952. 88 pp. Published and sold by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 45 cents.

[8] See section 25, entitled, Codes and Standard Practices, in the ninth edition of the "Standard Handbook for Electrical Engineers," pages 2116 to 2152. Published in 1957 by the McGraw-Hill Book Company, 330 West 42nd Street, New York 36, N. Y. Price $21.00.

[9] See 6-page folder entitled, "Standards Publications Issued by the American Institute of Electrical Engineers." This folder lists AIEE standards, test procedures, recommended practices, specifications, or guides — and reports on such subjects including certain American Standards, test codes, etc. Dated January, 1961. Available at no charge upon request from the American Institute of Electrical Engineers, 33 West 39th Street, New York 18, N. Y.

[10] "Publications on Fire Prevention and Protection." This 20-page leaflet describes a wide range of currently available literature from standards and reference works to popular folders and posters all devoted to the reduction of the loss of life and property by fire. Dated January, 1960. Available at no charge upon request from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.

****References (1) through (6) can be found at the end of Part One of this article (p. 23, 5/1/61 TE&M).**



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EQUIPMENT

New Concept In MDF Protection

PROTECTION FOR INSIDE EQUIPMENT

New 100-pair and 50-pair central office protector assemblies are designed to provide electrical protection for inside equipment. Known as "connectors," the equipment has been developed for installation in new or existing central office main frame rooms, and PBX, PABX and satellite communications.

By JOHN S. REED

TELEPHONE central offices are provided with electrical protective equipment on lines entering the office. This protective apparatus is designed to prevent foreign potentials and currents from damaging relays, switches and wiring, and creating a shock hazard for central office personnel.

The central office line protection equipment consists of carbon blocks for high potentials and heat coils for low-voltage "sneak" currents. These carbon blocks and heat coils are mounted on the distributing frame so as to be accessible for replacing operated blocks and coils and doing any needed maintenance work on them. The mounting devices for the blocks and heat coils are rather large and bulky, resulting in the central frame being covered from floor to ceiling with rows of protector mountings, all exposed to dust and dirt. Central office workers are also exposed to possible contact with energized protectors.

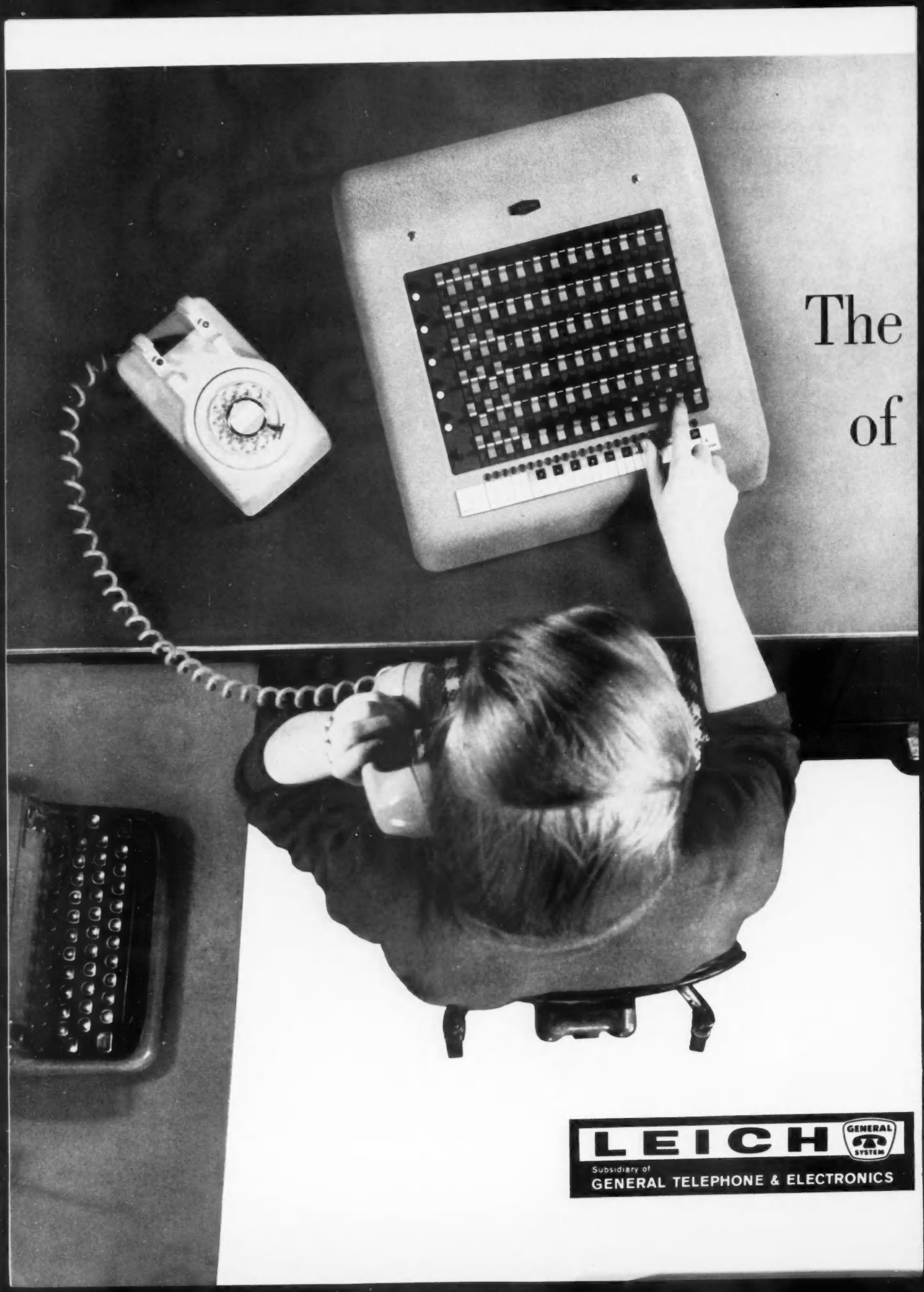
The main distributing frame also has the function of providing a place where lines may be added or changed by placing and removing jumper wires between the line and office sides of the frame and where tests may be made in the initial stages of locating trouble. These jumpers are connected to terminals and soldered thereon. Even for experienced frame men, the connecting operation is tedious and time consuming. Sometimes the jumper connections were not soldered, resulting in a trouble case difficult to locate.

A new type of protective equipment has been developed to overcome the objections of the exposed and bulky protective devices and the troublesome connections. This is a series of 100 pair and 50 pair central office protector assemblies termed "connectors." They are designed to provide electrical protection for inside equipment. The connectors have a fully color coded, plastic-insulated stub cable pre-wired to the connector assembly. A 50-pair connector is illustrated in *Figure One.*

The connectors are designed for installation in new or existing central office main frame rooms as well as P.B.X. or P.A.B.X. and satellite installations.

The connector head assembly consists of a cast resin body and a metal faceplate equipped with 50 pairs of twistlock inserted protector units. There are two types of protector units, one consisting of a standard central office type heat coil and a carbon block protector with .004" air gap and another of a metallic dummy heat coil for use where heat coil protection is not required. The dummy coil unit has the same carbon protector block as the other unit. An exploded view of the two kinds of protector units is shown in *Figure Two.*

The connectors are presently available in 100 pair and 50 pair sizes. The stub cable is 101 pair or 51 pair plastic cable which has 22 or 24 gauge conductors. The standard length of cable is 20 feet, though additional cable may be obtained in increments of 10 feet up to a maximum length of 100 feet. The connectors are made in 50 pair units. The 100 pair unit consists of two 50 pair units fastened together by mounting brackets and aluminum reinforcing bars.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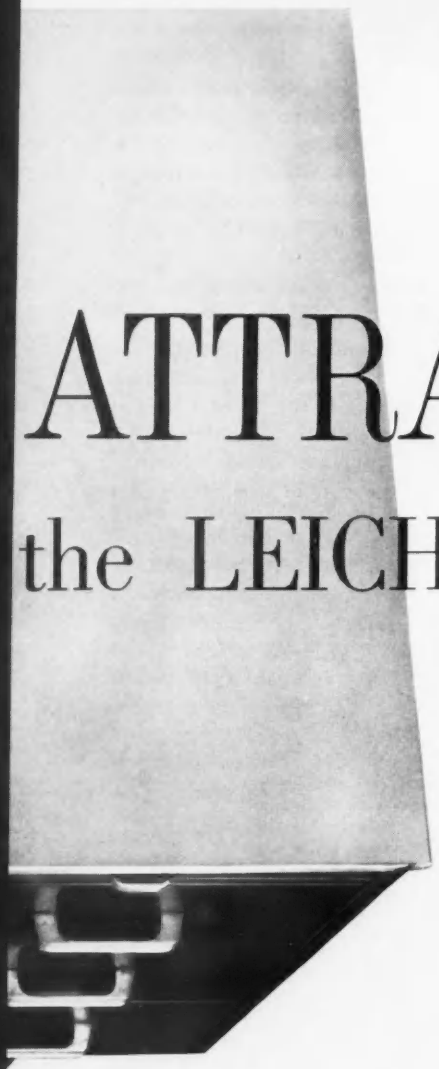

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manufacturers of telephones, switchboards and related apparatus since 1907

The connectors are also available without stub for special situations. Thus, for example, outside cable may be terminated directly on the R-300 Connector (Type B Frame), or jumpered from line terminal blocks (Type A Frame). All connectors are supplied with mounting brackets for attaching to main distributing frame protector bars.

The conductors of stub cable are connected to projecting terminals at the back of the connector by the wire wrap method. Square wire terminals are provided on the right side of the connector for the termination of the office wiring, by the wire wrap method, using the tool illustrated in *Figure Three*. The method by which a permanently stable connection is obtained is explained in *Figure Four*.

The stub cable is secured to the back of the connector on a reinforcing bar which, in turn, is fastened to the mounting brackets. The stub cable may be factory installed for upward or downward extension from the frame.

Line terminal strips are available from one to twelve rows of terminals with 20 or 26 terminals per row. One type of strip is designed for soldered connections on both sides, the second type for soldered connections on one side and wire wrapped connections on the other side, and the third type with connections which may be wire wrapped on both sides.

The newly developed connectors are said to have the following advantages:

(a) The connector head contains the protector elements and contacts completely enclosed in a high grade plastic assembly, free from dust. The "dead front" of the connector protects personnel from inadvertent contact with any potential that might be on the conductors as well as reducing the possibility of interference with service.

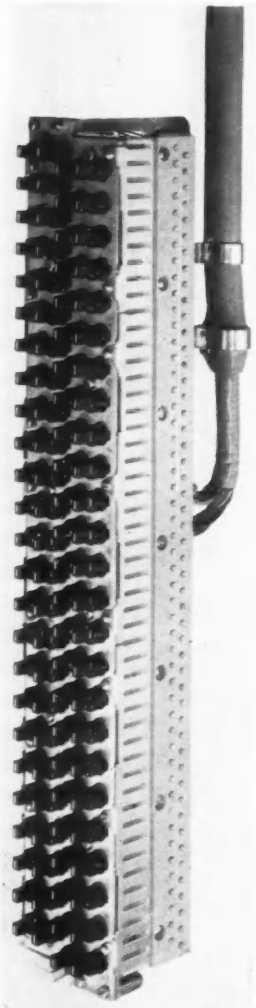


FIG. ONE: — Type R-300 connector for main distributing frame protection. (Reliable Electric Co.)

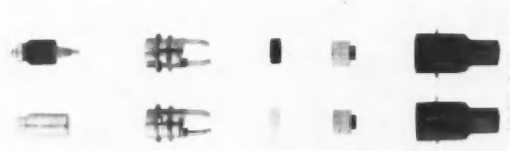


FIG. TWO: — Protector units used in R-300 connector. Type — Carbon block and standard heat coil assembly. At right is the heat coil, next following in order is the heat coil and carbon block sleeve, carbon block, porcelain block with carbon block insert, and finally the black cap with white line mark. Bottom — Dummy heat coil and carbon block assembly. The dummy coil is at the left. The cap is gray to indicate the type of protection used.

FIG. THREE: — The 14 H-1B wire wrap tool is designed to make jumper connections on the R-300 connectors. It operates by pressure on the trigger which drives the feed tube to wrap the bared end of the jumper wire around the terminal bug. (Gardner-Denver Company)

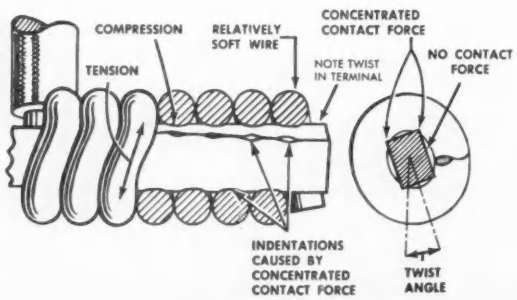


FIG. FOUR: — Showing how the wire wrap method makes permanent connection of the wire with the rectangular shaped terminal lug through a combination of compressive and tensile forces.

(b) Circuits may be opened without removing the protector assembly unit.

(c) The heat coil and protector assembly can easily be replaced.

(d) The connector can be pre-wired at the factory with even-count, fully color coded stub cable which permits easy and fast installation.

(e) A 100-pair connector is light and compact and can easily be installed in a few minutes by one man. The plastic stub cable with its corrugated aluminum shield is light and more flexible than a lead sheathed cable.

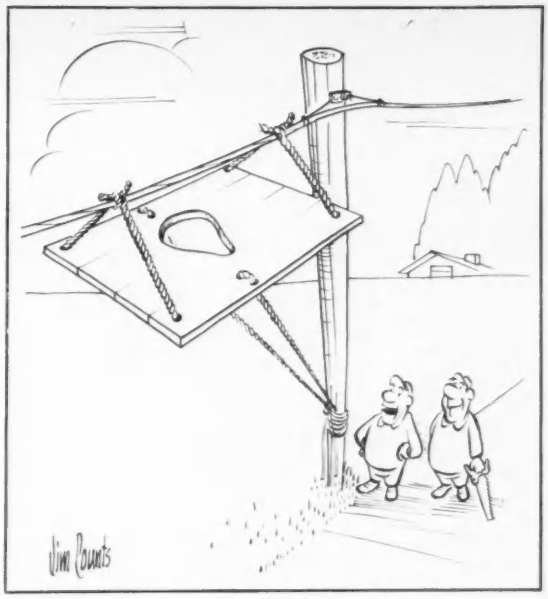
(f) The solderless wire-wrapped type terminals for the stub cable and office wiring simplify and reduce the cost of main frame installation and maintenance, though soldered connections can be made.

(g) Red, yellow and green caps for the protector assembly unit are available for special circuit application, as well as similarly colored designation plates for pair identification. These marking tags are easily installed and provide a neat, easily read installation.

(h) A white line on the face of all protector assembly caps will indicate the open or closed condition of the circuit. When the white line is horizontal, the protector assembly unit is in the closed or working position. When it is vertical, the protector assembly unit is in the open, or non-operating position.

(i) Where heat coil protection is not desired, connectors are available with a dummy (metallic) heat coil.

(j) Test shoes are not required. Plug and jack cord assemblies are employed with the connector assemblies on the main distributing frame. — *John S. Reed.*



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TRAFFIC LIGHTS

By D. A. PERIGO
General Traffic Supt., West Coast Tel. Co., Everett, Wash.

Public Relations And The Traffic Department

"NOT A ONE-MAN JOB"

Your "public relations" can fall short of its mark if you allow the entire job to be handled by one special group, or a manager who says "Next Tuesday is my 'public relations' day."

FREQUENTLY I get a feeling that a lot of our "public relations" are falling short of the mark. This may be caused by thinking in terms of a special group to handle public relations, or in the smaller companies, the manager saying to himself, "Next Tuesday is my public relations day." Public relations, I think, is a 24-hour-a-day job for everyone who gets his paycheck from our industry.

As an illustration, a commercial manager once said to me, "John Smith (a large toll user) told me at our service club luncheon the other day that he was getting a lot of slow answers." I asked the manager what he told Mr. Smith and found that he had said, "You know, John, I've been noticing the same thing. I'll say something to our people about it."

Another favorite remark of many employes (and some of them management) after some criticism is, "I just work there."

Public relations do not come from the guy that sits in a high back swivel chair behind a mahogany desk, but from every employe every time he is seen or heard by the public. This obligates each department to educate the employes of other departments in the very fundamentals of business. I have *not found a telephone company yet where there was any appreciable knowledge of traffic problems in other departments.* (I'll be glad to make special mention of any company that proves any error in this statement.) Under such circumstances how can there be success in public relations when there is lack of understanding within the company?

Here is an idea from a talk given to some telephone groups and to service clubs. It builds the prestige of your operators and informs the public. In addition to reciting some things operators have done (particularly in the community where the talk is given) we get into something like this: —

"There is a breakdown in a manufacturing plant. A part is needed for a machine. The boss gets on the telephone and orders the needed part to be sent special delivery. Everything goes according to schedule. The part arrives — and then it doesn't fit. The boss blows his top, grabs the telephone, dials operator — and what happens? There is a slow answer. By the time the operator answers all of the boss' anger is centered on her — so he just naturally 'bawls her out' before he gives her the call. He finally reaches his party, blows his top again about sending the wrong part, then becomes convinced that he received exactly what he ordered. He feels obligated to apologize to his party for his display of anger — and does — but when did he ever call back to apologize to that operator?

"Now let's examine the situation. Was the operator at fault? Well, is the bank teller at fault when I must stand in line because some others were there ahead of me? Is it the checker's fault when I come along with a single loaf of bread and just ahead of me is a woman who did her month's shopping? In the first place he just happened to get that particular operator. It could have been any of 25 others. In the next place, no operator has any control over how many calls are placed.

"You, sir (pick someone who is very attentive), how many long distance calls are you going to place next Tuesday? (Ask two or three others the same question.) Well it seems evident that you don't know how many calls you will make — and this is probably true also for the 5000 other customers who aren't here. As of noon today, Wednesday, we posted a schedule showing the days and hours that each one of our operators is to work all of next week. Now, if you don't know how many calls you are going to make, how do we know how many operators to have on duty each hour of each day?

"We follow a traffic pattern of what has happened in the past. Our records show the distribution of traffic in each

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Compare the advantages of this new Figure 8 standard for the industry against the distribution wire you're using now.

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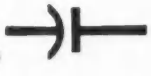
2. Jackets are also of HMW PE providing low moisture diffusion and long life with marked reduction in possible installation damage, or damage resulting from accidental contacts from foreign objects.

3.  0.083 mfd/mile nominal mutual capacitance.

4. Voice frequency increase of attenuation from dry air to heavy rain is 1% or less.

5. The increase at 200 kc is approximately 2%. Complete, fully illustrated installation instructions accompany every order to help simplify installation.

6. Anaconda RD-8 is available in 19 Awg; SD-8 in 22 Awg.

7. All-polyethylene construction assures long life and excellent transmission characteristics.

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FOR TELEPHONE WIRE AND CABLE

THE INDEPENDENT MANUFACTURER FOR THE INDEPENDENT TELEPHONE INDUSTRY

hour of the day. From these we determine how many operators are required each hour of an average day and try very hard to schedule the operators so we have no more and no less than required. But let's face a fact: There is no such thing as an average day in all respects — except by accident. Telephone traffic today reacts quickly to the things that happen. The inauguration of John F. Kennedy followed by his address was a period of very little activity in our offices — but within five minutes after it was over we were swamped with calls. A couple of years ago a newscast about a hurricane along the east coast which was swinging inland caused a peak of coin box traffic in an office along the Oregon coast. It was during the tourist season and people from the east, or with friends and businesses there, heard the broadcast in their automobiles — then headed for a telephone.

"When we have too many operators on duty we are wasting the money you pay for service and when there aren't enough your service is not good. Examination of the traffic pattern shows 300 calls in a particular hour — but that doesn't tell the story. If these calls come in at 12 second intervals they could be handled perfectly and economically — but usually they come in bunches with too many for a brief period and then operators sitting idle for another period.

"If there is an indication that traffic will continue to be heavy we call in reserves to help handle it. It should be obvious, then, that an operator who becomes ill should call in before her assignment starts so we can get someone to work in her place. In most jobs work is assigned to the people but operators are assigned to the expected work.

"We think that you people who are our customers accept our service when the operator answers after you have heard one ring back (see note below). Is there anyone here who doesn't. Remember we are talking about averages. There will be times when you must wait longer — even as I must wait with my loaf of bread while the checker adds up a truckload of groceries for the lady ahead of me.

"When our operator answers your signal with 'May we help you' it is because all of us really want to."

These stories can go on and on — and they happen in your offices too — so use your own local stories.

It is the business of a telephone company to handle the traffic which our customers offer us. Public relations can be outstanding when your employes and your customers have an appreciation of how it is done.

Special Note: "After one ring back" means an average answer of six seconds — and this means about 15% over 10 seconds. There are a lot of Traffic people who do not agree with the author that this is satisfactory service, and they provide service with an average answer of less than four seconds. It takes more people and more positions to provide less than four second service, and it provides more idle time for operators, particularly in smaller units.

Microwave Bulletin

LYNCH Communication Systems Inc., in a new 12 page bulletin describing its microwave system, states the LMR20 is a complete communication system using microwave as the means of transmission and Lynch carrier equipment as the means of keeping all conversations separate and private.

The Lynch Microwave System consists of radio (RF equipment), multiplexing (channeling equipment) and the necessary antennas, towers, buildings, etc. for each individual station. Lynch channeling equipments available for use with the LMR20 include: both high and low-density channeling systems providing trunk and subscriber service for data, voice, telegraph and telemetry.

Toll circuit quality can be obtained for up to 600 channels over as short a distance as 5 or 10 miles and as long as 1000 miles.

The microwave systems are available for operation in the common carrier band from 5925 60 6425 megacycles: the industrial band (operational fixed) from 6575 to 6875 megacycles; the government band between 7125 and 7650 megacycles and for operation above 10,000 megacycles, the frequencies affected by the F.C.C.'s recent ruling.

For copies of the bulletin write *Lynch Communication Systems Inc., Dept. TEM, 695 Byrant, San Francisco 7, Calif.*

SUB-HARMONICS and OVERTONES

By C. D. EHINGER

Pres., Citizens Telephone Co., Decatur, Ind.

"Keep That Return Loss HIGH"

AN ERROR IS CORRECTED

In a recent article describing "return loss" on a circuit, the use of the word "low" as the adjective in place of "high" set up an error that TE&M readers promptly caught, and in this article the author corrects the record.

THE RECENT two-part article on "measuring return loss" (*see March 1 and April 1 issues*) was written many months ago and I had nearly forgotten it by the time it was published.

Shortly after the publication of the first part of the article, I received a letter which, rather gently, took me to task for stating that "return loss should be kept low." I answered the letter without checking the article, and thought that would probably be the end of the matter. After that, the deluge of letters started. All of the writers of the letters had immediately spotted my basic error and some really "combed my clock" for making such a stupid error.

With the coming of these latter letters, I checked back into my files, in earnest, and fully reread the article and soon discovered that all of the writers of the letters were fully justified in their comments. I found that I *had* made a stupid, unexcusable error in that I kept writing about "keeping return loss *low*" when, of course, we strive to keep return loss *high*.

As several letter writers pointed out to me in their missives, this can be easily shown by doing what I should have done in the first place — referring to the equation for return loss.

By definition:

$$\text{"Terminal return loss"} = 20 \log_{10} \frac{Z_N + Z_L}{Z_N - Z_L}$$

where Z_N is the impedance of the compromise network and Z_L is the impedance of the local plant.

Since the ideal condition exists when the impedance of the compromise network is exactly equal to the impedance of the local plant (a rare condition) the denominator in the above equation becomes zero, under perfect match conditions, and the "terminal return loss" becomes infinite. Obviously, return loss should be as *high* as possible in order to keep *reflected energy to a minimum*.

As George Goebel would say — "So there you are." I pulled a booboo of the first water and don't ask me how or why. I wish I could say it was a printer's error, or that those dog-gone proof readers were goofing off, or that I deliberately did it in order to see whether any of you were staying awake when you read my bits of nothing. Unfortunately, if I said any of those things, I would be lying through my teeth because I goofed this one all by myself without the slightest bit of aid from anyone.

I have had — rather ruefully — some consolation out of the whole thing. I have found out, the hard way, that one heck of a lot of you do read these articles, and that the magazine does get considerable coverage.

Well, that's the story. I goofed it and did a "fine business" job of goofing — I'm sorry. It certainly does bring one thing to the forefront for me. I have a long series in the making concerning subscriber-loop design and I had certainly better "pay attention to my business" on that series or you fellows will tear me to shreds or I will set the industry back a solid 50 years — or something. Anyway, keep those letters coming, because I enjoy each and every one of them. What was the name of that bird who wrote "Ain't it funny how fast the hand that pats you on the back can double up into a fist?"

Ann Landers, I turn myself over to your judgment — how many lashes with a wet noodle should I receive for my sins of omission and commission? —*C. D. Ehinger.*

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"Washington"

(Continued from page 22)

eliminated; and minimized engineering and installation work required for private systems.

Advantages to the telephone company, compared with TWX, include reduced expenses, since recording and billing of individual calls will be eliminated, and calls requiring operator handling, such as collect and conference, will not be billed at WADS rates; and greater use of the service will be promoted, through better service and improved customer satisfaction.

WADS originating areas will be the same as those now applicable for WATS, except that the originating state will be included. Rates for each class of service will be uniform for all customers throughout an entire state with the exception of seven states, where sizes and/or teletypewriter density makes it desirable to split the state, with each subdivision treated generally as if it were a separate state, AT & T reported. States with two subdivisions are California, Illinois, Michigan, Ohio, and Pennsylvania, while New York and Texas will have three.

SUBMIT YOUR PROBLEMS

You are invited . . . to tell our authors about problems on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the opportunity to discuss as many as possible in TE&M's regular departmental columns.

Rates will be the same for sending-only and sending-and-receiving access lines, AT & T went on, while rate levels for receiving-only lines will be lower. Full time rates will include provision of a keyboard sending and receiving teletypewriter with type box; measured time rates will include provision of a keyboard sending and receiving teletypewriter with type wheel; and receiving-only rates include provision of a receiving-only teletypewriter with type wheel.

Outlining the reasons for offering WADS service for combined intrastate and interstate use, AT & T ex-

plained that from its knowledge of customers' requirements, it was felt that separate line for interstate and intrastate use would be unacceptable to many users, and would greatly curtail the market. It was noted that many customers have only enough use for one machine, and that this is true even for large switching systems at some locations. In addition, customers with large systems have many multiaddress messages, and they would have to sort out interstate and intrastate messages.

At the same time, it was pointed out, the telephone companies would incur substantial additional investment and expense for duplicate facilities.

The supporting material, explaining the reasons for the developmental filing at this time, noted among other things that one customer, Delta Airlines, has outgrown its present private line switching system and has to move to new quarters. It seemed unreasonable, AT & T said, to force Delta to subscribe to a new switching system when the provision of WADS was imminent.

Discussing Independent company participation, the material brought out that Independents generally participate only to a limited extent at this time in teletypewriter services, either TWX or private line. Usually, the machines are owned by Bell System companies, and Independents furnish local channels. AT & T said, however, that there are indications that many Independents, including most of the larger ones, are interested in owning and maintaining the teletypewriter machines in their territories under the plans for converting TWX to dial operation.

With WADS, it is important that it be provided for customers located in Independent territories, it was brought out. Preliminary discussions with Independent industry representatives indicate that for the present, on an interim basis, spending development of new settlement plans, they are agreeable to having WADS in their territories furnished under the same arrangements as for present private line teletypewriter services, AT & T reported.

It said Independents in whose territory developmental line switched teletypewriter service stations are located are being asked to concur in last week's tariff filing, or participate as a connecting carrier, and concur in the Bell System associated company tariff filed with the appropriate state commission.

Wiretapping Legislation

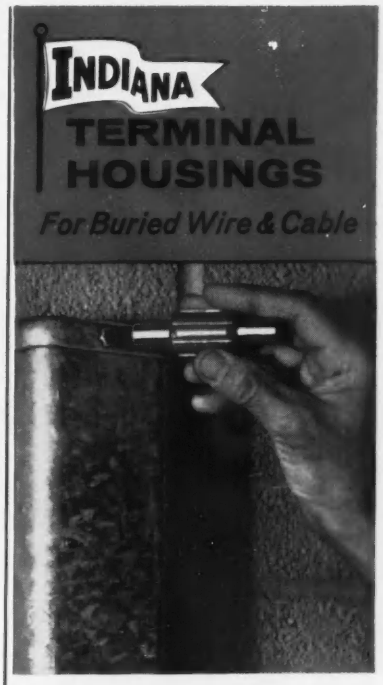
FOR THE first time after a number of years in which wiretapping legislation has been introduced in Congress and several occasions in which Congressional committees have held hearings, a fairly strong prospect that a bill will emerge from the Senate Judiciary Committee during the course of the 87th Congress was seen after four days of hearings in mid-May on the subject.

A score of witnesses appeared before the group in the sessions, with most in favor of some kind of legislation. While law enforcement authorities, particularly those from New York state, stressed the need for "untying" the hands of public officials and permitting prosecution for serious crimes based in part on wiretap evidence, most of the witnesses agreed that some legislation is needed to clarify the present confused situation.

A telephone industry witness, W. Coles Hudgins, Vice President-operations of the Mountain States Telephone & Telegraph Co., declared that the Bell System "would welcome legislation which would strengthen the privacy of telephone service.

"However, we also realize that this individual right, like many others, is subject to the overriding needs of society as a whole. It may be that Congress will conclude that problems of national security and the prevention and detection of serious crimes warrant some invasion of this right of privacy. But we feel strongly that wiretapping in general should be prohibited, and that any exceptions should be very carefully considered, and should be accompanied by every reasonable safeguard against abuse which can be devised."

— Roland Davies & Fred Henck, Editors, "Telecommunications Reports."



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Made of heavy gauge steel and galvanized AFTER forming, INDIANA Terminal Housings provide long-lasting protection to terminal blocks, loading coils and/or splicer. Both pedestal and pole-mounted types, designed to accommodate from one to 400 pairs, are available.

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Telephone Industry News Highlights

COAST-TO-COAST REPORTS

General Telephone & Electronics Corp. recommends jointly-owned Space Communications Co. . . . A T & T proposes satellite system owned and operated by international common carriers . . . James J. Clerkin elected president of General Telephone & Electronics International, Inc.

Gen. Tel. Recommends Formation of Jointly-Owned Space Communications Co.

GENERAL Telephone & Electronics Corp., recommended to the Federal Communications Commission on May 1 that the nation's communications companies be authorized to form a single jointly-owned commercial space communications company.

The recommendation, contained in a filing answering an FCC request for industry comments on various regulatory and administrative problems relating to the authorization of commercial space communications, claimed that the new enterprise would meet the rising demands of international communications by providing not only greatly expanded telephone service but also global television and high-speed business data transmission.

The GT&E filing stressed that satellite communications requires "effective utilization of all this country's scientific, engineering, and management resources in the communications common carrier field."

The company pointed out that it is prepared to "participate substantially" in the recommended jointly-owned organization through equity participation and extensive research and development work in satellite communications.

The 27 domestic telephone operating subsidiaries of GT&E comprise the largest Independent telephone system in the U. S., serving some 4,200,000 telephones in 5,600 communities in 31 states. International telephone subsidiaries of GT&E serve a total of 570,000 telephones in British Columbia, the Dominican Republic, and Haiti. Research and engineering projects in many technical fields are conducted at 26 laboratories throughout the country. The company's products include a wide range of communications, electronic, and related equipment and devices. Total sales and revenues were $1.2 billion last year.

WILLIAM B. HARRISON, left, president, Independent Telephone Corporation, receives a check for $2,800,000 from I. W. BURNHAM, II, senior partner, Burnham and Company. The check represents proceeds of an underwriting managed by Burnham and Company to provide additional funds to ITC for new acquisitions. ITC already owns telephone operating companies in New York, New Jersey, West Virginia, Michigan and Florida.

The communications system would consist of ground stations which would transmit high-frequency radio signals to satellites in outer space, which in turn would relay the signals to ground receiving stations located throughout the world. It has been estimated that the rapidly expanding demands of international communications will exceed the capacity of existing and presently planned cables within the decade. International telephone calls alone are expected to grow at an annual rate of 15 per cent, from 2,000,000 calls and revenues of $40 million in 1959 to 10,000,000 calls and revenues of $200 million by 1970.

Pointing out that the proposed system would serve as a link in international communications, providing new services to additional areas of the

world as well as supplementing existing radio and cable service, GT&E said that the international communications common carriers will continue to compete for customers as they do now. "Each existing or future common carrier will have the opportunity to use the satellite system on equal terms and thus compete on equal terms with other carriers."

Only Single System Feasible

Only a single commercial communications satellite system is feasible within the foreseeable future, the company said. The following reasons were cited: "Costs involved in research and development, as well as construction and operation of a commercial satellite communications system, are very substantial; the amount of satellite traffic anticipated can be handled by one system, and additional capacity can be added at a cost much less than the cost of equivalent capacity in a new system; the portion of the frequency spectrum available will be limited, and the amount of interference is likely to increase if two systems are placed in operation."

The company said that under its plan of operation "the satellite company would be owned by all existing and future domestic and international U. S. communications common carriers which elect to participate, including at least the major companies in the field." It was pointed out specifically that domestic communications companies are included with the international companies in the category of communications companies which would be eligible to own stock in the satellite company because the domestic companies play an integral part in the flow of international communications traffic by originating and terminating such traffic and carrying it in part over their own facilities.

Merits of Joint Ownership

"Ownership participation by many U. S. communications carriers will facilitate pooling of scientific manpower and equipment, thereby tending to insure the early success of the project and enhance the nation's prestige. This method of mobilizing our national resources also avoids the limitations inherent in relying principally on the facilities of a single company to design a satellite system and to plan its implementation," GT&E stated.

The satellite system would be available for use by all authorized existing and future U. S. and foreign international communications common carriers, without regard to ownership in the satellite company.

To insure against the possibility of discrimination in the use of the system by competing communications companies, GT&E pointed out that ground station facilities should be available to all such companies, whether or not their traffic is sufficient to warrant a separate ground station for their own requirements. All message traffic of the same class would be handled on a "first come, first served" basis.

On the occasion of inauguration of dial telephone service by the Kodiak (Alaska) Telephone Company, Rear Admiral HENRY CALDWELL (center), Commander of the Seventeenth Naval Air Base, places the first long distance call to Alaska's newly-elected Senator E. L. Bartlett, in Washington, D. C., while JOHN CUSHING (right), president of the Kodiak Telephone Co. looks on. Also on hand to check on performance of the new "XY" exchange was ERNEST LARSON (left), of the Telecommunication Division of General Dynamics | Electronics, supplier of the dial equipment.

AT&T Proposes Satellite System Owned And Operated By International Common Carriers

THE American Telephone & Telegraph Co. on May 1 proposed to the Federal Communications Commission that international communications common carriers in this country and abroad place "microwave towers in the sky" in the form of satellite systems that would be jointly owned and operated.

The company emphasized that in neither purpose nor effect would the proposed plan lessen competition, restrain commerce or create unlawful monopoly in international communications.

"Under our proposal," A. T. & T. said, "the satellite facilities would be equally available to all duly licensed carriers through either ownership participation based on usage or by lease participation, as they elect.

"The satellite system could be used

TELEPHONE ENGINEER & MANAGEMENT

TELEPHONE INDUSTRY

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This Telephone Marketing Edition will be another "First" for TE&M and the Telephone Industry. TE&M's regular staff writers plus several outstanding marketing experts of the telephone industry making guest appearances with exclusive articles will make this edition of immediate interest and continued value to every telephone company, large or small.

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The Following Articles Will Appear In This Important Issue

"THE BUSINESS CUSTOMER'S REACTION TO A PLANNED SALES APPROACH," by F. Blaine Ward, Director of Sales, General Telephone & Electronics Corp., New York, N. Y.

This exclusive TE&M article sets forth the reasons why General Telephone embarked upon its planned approach to sales, outlines certain market studies, and deals generally with the business customer's situation in relation to his total communications requirements. The article describes: (1) procedures developed and presently used by Gen Tel in connection with the identification and classification of business customer market — this includes sales productivity objectives and planned market coverage procedures; (2) General Telephone's sales personnel, including what a well qualified and adequately trained professional communications salesman must do, and what he must know to successfully discharge his responsibilities to the customer, the company, and himself; (3) the customer's reaction to the planned sales approach; and (4) the results of General's sales program in terms of sales productivity and increased revenues — these results will also be interpreted into understandable comparative terms that should be of considerable interest to the industry.

"HOW YOU GONNA SELL THEM DOWN ON THE FARM?" by Forrest J. Eherenman, General Commercial Supervisor, United Telephone Co. of Indiana, Inc., Warsaw, Ind.

Rural Subscribers represent a virtually untapped market for extension telephones, bells, horns, intercom systems, color instruments, extra listings, and up-grades in service, and this article suggests "it's up to the telephone industry to hit the trail, equip our huckster wagons and visit Farmer Brown where he lives . . ."

announces another important "FIRST"

MARKETING EDITION... JULY 15

"SELL MORE — EARN MORE," by John G. Reynolds, Editor of "Telephone Engineer & Management."

This special TE&M Report describes by text and illustrations the many telephone equipment items that have proved popular with telephone subscribers, and have helped the nation's telephone companies "Sell More" and "Earn More." Prepared from exclusive data obtained from telephone equipment manufacturers, this article accomplishes three goals: (1) it presents a complete pictorial introduction to today's most popular revenue boosters; (2) it presents case history reports of telephone company sales activities that have produced outstanding results; and (3) it presents a complete guide to available information that will help a telephone company do a better job of selling new and additional services.

"THE PLANT MAN'S PART IN THE MARKETING PROGRAM," by John S. Reed, Lincoln (Neb.) Telephone & Telegraph Co.

Today, the plant man's part in the merchandising program has been recognized. Plant workers, particularly those who install telephones and other types of communication equipment, are in almost constant contact with the public. The average installer meets from four to six subscribers daily. From his experience and his many varied contacts, he can visualize the needs for the various types and grades of telephone service, and can make effective sales contacts for services such as extensions and colored telephones. Plant workers, who are diffident about selling telephones, can be encouraged through suitable training and promotional efforts to put efforts into their sales contacts. This article tells how the job can be done.

"THE SMALL COMPANY'S MARKETING JOB," by Bill Corman, Manager, Southland Telephone Co., Atmore, Ala.

Telephone marketing does not stop at the city limits of the big city served by a large telephone company. Today, the small company, with its dial equipment and subscribers who want and are able to pay for more and better telephone service, are finding that the marketing programs that produce added revenues for the large company work equally as well for the small company. This article tells "why" and "how."

"BOOST REVENUES WITH BOOTHS & PAY STATIONS," by C. D. Ehinger, President, Citizens Telephone Co., Decatur, Ind.

Statistics show that the average man, in his lifetime, spends 8,760 hours telephoning — the equivalent of one full year. And if the result-producing ideas presented by this article are followed, man's use of the telephone — particularly at locations away from home and business — may very well increase.

"THE TRAFFIC DEPARTMENT CAN HELP YOUR MERCHANDISING PROGRAM," by D. A. Perigo, General Traffic Supt., West Coast Telephone Co., Everett, Wash.

The experienced marketing manager knows the true value of leads, and this article points to a ready source of good leads — the Traffic Department that is set up to (1) furnish leads for additional directory listings, (2) tie in Service Advisor visits to PBX's, and (3) show need for upgrades or additional lines.

"BOOSTING DIRECTORY REVENUES," by Allan R. Stacey, Vice President, Sunland-Tujunga Telephone Co., Sunland, Calif.

Today's modern telephone directory is not only a guide to the names, addresses, and telephone numbers of a town's telephone subscribers — it is a convenient guide to products and services, used by millions of shoppers. This article tells how a telephone company can boost its revenues by doing a better job of selling additional listings and building up the Yellow Page section, and making the directory a complete guide to the products and services offered by the local merchants and national organizations having representatives in the telephone company's exchange area.

"Off The Board"

Communications Securities

Market as of May 12, 1961	DIVIDEND	BID	ASKED	LAST SALE
American Tel. & Tel. Co.	$3.30			126⅝
Anglo-Canadian Tel. Co. (Br. Col. Dom. Rep.)	1.20	49	52	
Bell Tel. Co. of Canada	2.20	53¼	55	
British Columbia Tel. Co.	2.20	51¼	53¼	
California Interstate Tel.	.70	19¾	21	
California Water & Tel. Co.	1.36	38¼	39¾	
Calif. Pac. Util. Co. (Calif., Ore., Nev.)	.90	25¼	27½	
Carolina Tel. & Tel. Co.	1.60	45½		
Central Tel. Co. (Minn., Ia., N. C.)	.88	32½	34½	
Chenango & Unadilla Tel. (N. Y.)	1.20	27		
Cincinnati & Suburban Tel. Co.	4.50	106½	109½	
Citizens Util. Co. (Calif., Pa.) "A"	stk. only	22½	24½	
Citizens Util. Co. (Calif., Pa.) "B"	.60	19¾	21½	
Commonwealth Tel. Co. (Pa.)	1.00	25	27	
Florida Tel. Corp.	1.00	29½	31¼	
General Tel. & Electronics	.76			28
Hawaiian Tel. Co.	1.08	19¼	21	
Independent Tel. Co.	none	9¾	10¾	
Indiana Tel. Co.	.50	33		
Inter-County Tel. & Tel. Co. (Fla.)	.72 + stk	28½	30¼	
Inter-Mountain Tel. Co. (Va., Tenn.)	.80	17¾	19½	
International Tel. & Tel. Corp.	1.00			59¾
Jamestown Tel. Corp.	6.00	88		
LaCrosse Tel. Corp.	.80	16		
Lincoln Tel. & Tel. Co. (Nebr.)	2.60	65		
Lorain Tel. Co. (Ohio)	1.40	33		
Middle States Tel. Co. (Ill.)	.92	35	37	
Mountain States Tel. & Tel. (Ariz., Colo., Mont., Tex.)	.90			325⅝
New England Tel. & Tel. Co.	1.72	52	54	
North Carolina Tel. Co.	none	1⅝	2	
Northern Ohio Tel. Co.	2.00	64	67	
Pacific Tel. & Tel. Co.	1.14			41⅝
Peoples Tel. Corp. (Pa.)	4.00	105	110	
Pioneer Tel. Co. (Minn.)	1.00 + stk	36	40	
Rochester Tel. Corp. (N. Y.)	1.00			29¾
Southeastern Tel. Co. (Fla.)	1.00	27	29	
Southern Nevada Tel. Co.	1.20	46	49	
Southern New England Tel. Co.	2.20	52½	54½	
Southwestern States Tel. Co. (La., Ark., Okla., Tex.)	1.28	31	33¼	
Telephone Service Co. of Ohio "A"	.36	30½	32½	
Telephone Service Co. of Ohio "B"	.36	35		
Tidewater Tel. Co. (Va.)	1.40	27		
United Utilities Inc.	.80	27½	29	
Virginia Tel. & Tel. Co.	1.00	21		
West Coast Tel. Co. (Wash., Ore., Calif.)	1.36	36¾	38¾	
Western Carolina Tel.	.92½	10	11	
Western Power & Gas	1.20	28	30	
Western Union Tel. Co.	1.40			46
Western Utilities Corp.	.36	14	16¼	
Western Light & Tel. Co., Inc. (Mo., Kans., Ia.)	2.40	31½	33¼	

(Source of Market — DEAN WITTER & CO.

by them for any overseas communications services which they provide now or in the future may be authorized by the FCC to provide.

"We are confident that this plan is practical. It places the responsibility for establishment, ownership and operation of these additional common carrier facilities where it should be — with the carriers themselves."

The company's proposal responds to an inquiry by the Federal Communications Commission into problems of establishing commercial space communications.

Last January the FCC assigned frequencies to the Bell System for use in satellite communications experiments. Bell has already begun work on a ground station near Rumford, Maine, at which it expects to conduct space communications experiments. Later, the station would be available for commercial overseas communications service.

A. T. & T. said that satellites are well suited to supplement existing facilities and expand service to developing areas of the world.

"They would afford highly desirable alternate routes for overseas links, many of which are important to our national security," the company said. "Portable ground stations could give access on short notice to trouble spots around the world.

"Placing a satellite system in operation would add another important group of overseas communications channels through what amounts to microwave towers in the sky."

Under the plan proposed by A. T. & T.:

Ground stations in the United States could be provided and owned jointly by the U. S. international carriers based on use by each participating carrier.

Any U. S. international carrier, or group of carriers, could establish its own station or stations in the U. S. and share use of satellites either through ownership or lease.

A U. S. international carrier could lease from another international carrier the right to use circuits, including terminal facilities, in the satellite system, just as circuits in underseas cables are now leased.

Satellite investment and operating costs would be shared among the U. S. international carriers and foreign communications administrations and agencies also on the basis of use.

As additional foreign agencies or U. S. international carriers decide to join in use of the satellite system, they could make appropriate capital payments to the others and assume a proportionate share of continuing costs.

Or they could negotiate agreements to lease facilities from one or more of the joint owners.

Foreign ground stations would be provided and owned by communications agencies in their respective countries.

A. T. & T. said the proposed system is flexible enough to permit countries with relatively small communications needs to provide their own less complex ground stations at costs below those on major routes, thus providing direct access to inland nations and remote areas without ground links.

Countries that wish to use the system, but prefer not to build their own ground stations, could — as with present ocean cables — lease satellite circuits from the agency of another country having a ground station and could arrange for any landlines needed to reach that station.

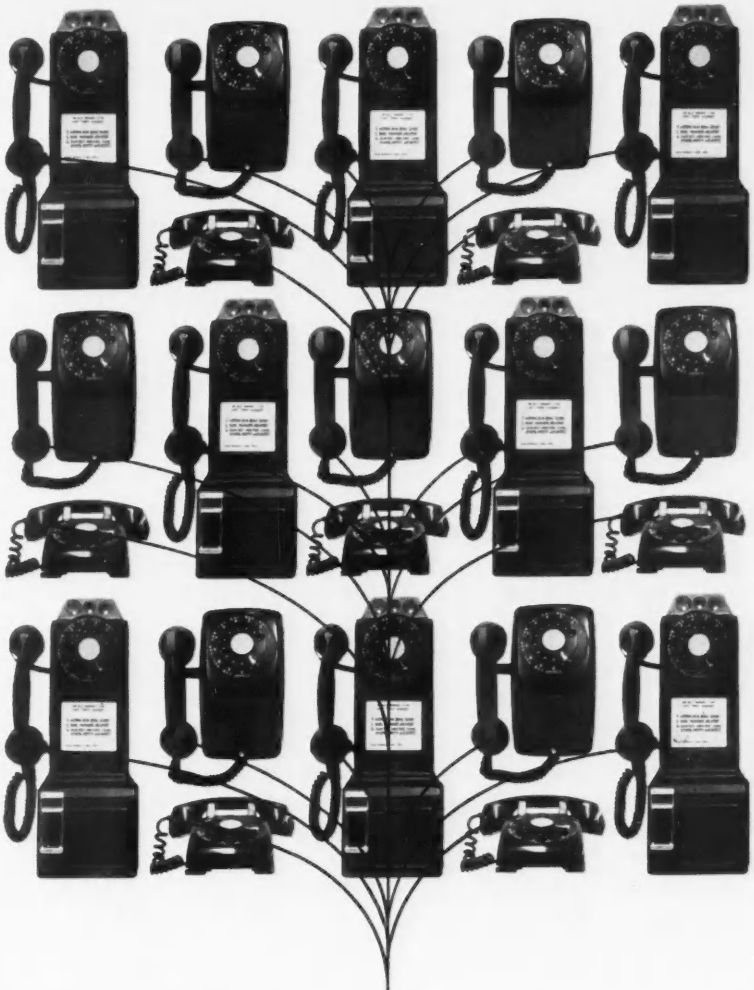
Participation at the U. S. end would be limited to international common carriers fully subject to regulation by the FCC, who would have access to the satellite system on nondiscriminatory terms approved and supervised by the FCC.

A. T. & T. pointed out that its proposal reflects long experience of the U. S. communications industry in joint undertakings with other countries of the world in providing overseas communications using cable and radio.

The Bell System today has agreements with more than 160 government and private communications agencies in foreign countries covering service and ownership arrangements.

Crice Named Chief Engr. S. W. Bell's Ark. Area

HERMAN E. CRICE has been promoted to chief engineer for Southwestern Bell Telephone Company in



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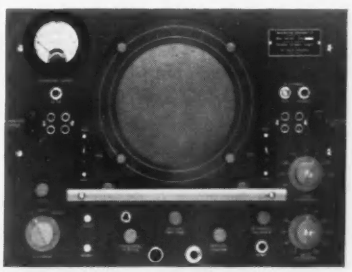
You can meet the challenge of modern, ever increasing service demands; the far more stringent test requirements resulting from D.D.D.; by application of the new Hallamore designed and manufactured Swept Band Transmission Test Set. This unique instrument affords fast, completely accurate transmission measurement (including repeater or amplifier gain, determination of return losses, and location of loading faults). Readings are in visual form, easily photographed to provide a permanent record. Range is from 200cps to 4000cps. Unit may be rack mounted or may be used for greater mobility on a Hallamore test wagon. Accessories include a Hybrid Test Set, Camera Attachment, and Artificial Lines. For detailed information, please write Hallamore, Telephone Department, 714 No. Brookhurst St., Anaheim, California. PRospect 4-1010, D.D.D. area 714.



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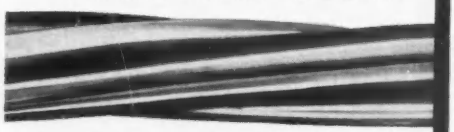
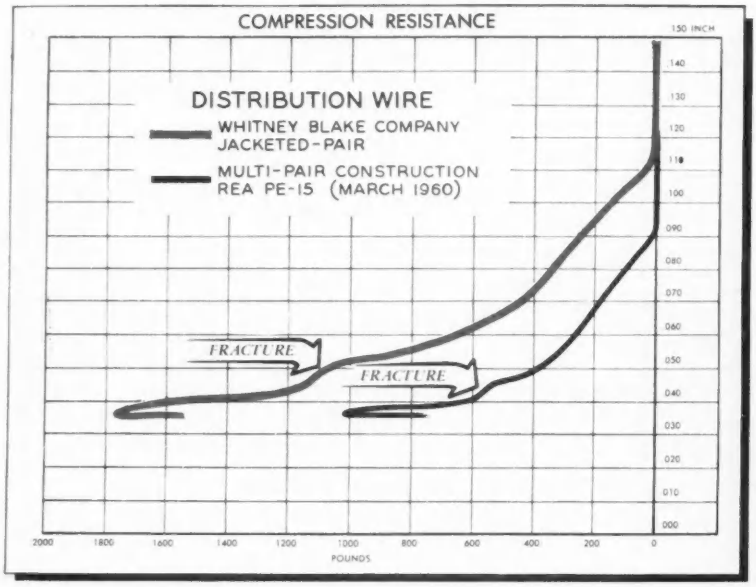
JACKETED PAIR



DISTRIBUTION WIRE

DOUBLE THE COMPRESSION RESISTANCE

of PE-15 Type



In order to demonstrate the extreme mechanical toughness of the JACKETED-PAIR wire, and to obtain a measure of the mechanical handling capabilities, samples of JACKETED-PAIR and the PE-15 construction were subjected to a compression-resistance test. The PE-15 type withstood an average of 525 pounds before the insulation was crushed to the failure point while the JACKETED-PAIR required an average crushing pressure of 1080 pounds. Thus, the JACKETED-PAIR has more than twice the compression resistance of the PE-15 type multi-pair distribution wire.

WB WHITNEY BLAKE CO.

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Arkansas. He succeeds William M. Groves, Jr., who died April 14.

Crice has been plant extension engineer for the company in Oklahoma

Clerkin Elected President of Gen. Tel. & Electronics Int'l.

JAMES J. CLERKIN, Jr. has been elected president of General Telephone & Electronics International Inc., international manufacturing and marketing subsidiary of General Telephone & Electronics Corp., according to an announcement by Donald C. Power, GT&E chairman and chief executive officer.

Clerkin, currently executive vice president of Comptometer Corp., will

JAMES J. CLERKIN, Jr. has been elected president of General Telephone & Electronics International Inc., international manufacturing and marketing subsidiary of General Telephone & Electronics Corp. Clerkin, currently executive vice president of Comptometer Corp., assumed his new post June 1.

assumed his new post June 1. He succeeds Gene K. Beare who was recently elected president of Sylvania Electric Products Inc., a GT&E subsidiary. His headquarters will be in New York City.

As president of GT&E International, Clerkin will have over-all responsibility for all GT&E manufacturing and marketing operations outside the United States. He will serve concurrently as president of Automatic Electric International, Inc., international manufacturing and marketing affili-

ate of Automatic Electric Co., a communications equipment manufacturing subsidiary of GT&E.

A native of New Britain, Connecticut, Clerkin was graduated from Worcester Polytechnic Institute, Worcesetr, Mass., in 1944 with a bachelor of science degree in mechanical engineering. He served during World War II with the U. S. Navy, being attached to the Naval Ordnance Laboratory. He was graduated from the Harvard Graduate School of Business Administration in 1947 with a master's degree in business administration.

Clerkin joined Theodore Gary & Co., telephone operating and manufacturing organization, in 1947 as assistant to the president of Automatic Electric Co., which was then the communications equipment manufacturing subsidiary of the Gary organization. He became assistant to the commercial manager of Automatic Electric in 1948, and then commercial manager of Automatic Electric International.

Clerkin was appointed director of financial planning, and elected assistant treasurer and secretary of the Gary Group companies in 1949, and the following year became director of planning on the staff of the chief operating officer of the Gary Group. From 1952 until 1956, he served as vice president and director of Continental Telephone and other Gary telephone operating companies which became part of General Telephone in 1955. He joined Comptometer Corp. in 1956 as vice president, was elected a director in 1957, and executive vice president in 1960. Clerkin will continue as a director of Comptometer Corp.

The subsidiaries and associates of GT&E International and Automatic Electric International manufacture and market a wide range of products in the communications, electronics and electrical fields. Subsidiary manufacturing operations are located in Canada, Italy, Belgium, Argentina, Brazil and Mexico. Associated companies are located in Great Britain, Italy, Mexico and Japan. Sales offices, distributors and agents are located in nearly 80 countries and territories.

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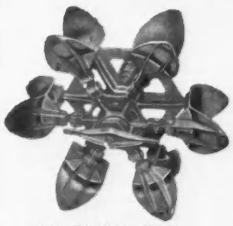

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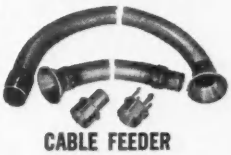

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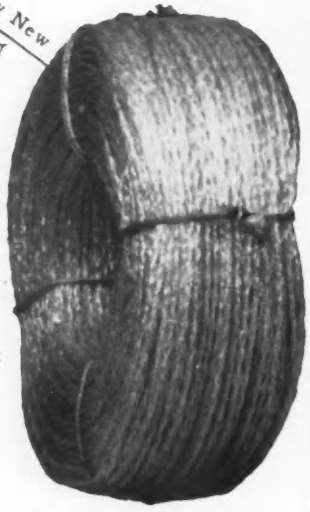

Cable Spinning Equipment Company

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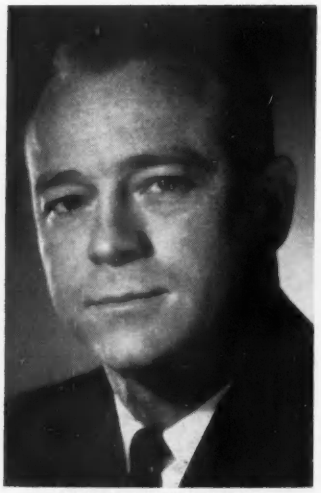
CE 2-7234 or CE 2-7235 Topeka, Kansas

CLYDE S. BAILEY, popular executive vice president of the United States Independent Telephone Association, Washington, D. C., is reported "recuperating nicely" from an operation performed last month, and hopes to return to his duties this month.

Bardwell Appointed Supvsr. At Gen. Tel. Directory

JAMES (Jim) Bardwell was promoted in early-May to sales training supervisor for the Midwestern Area of General Telephone Directory Company.

Prior to his promotion, Bardwell was sales supervisor of the Fresno,

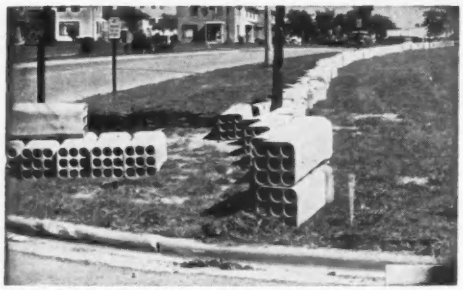


JAMES BARDWELL

California Unit of the Directory Company's San Francisco Division. Bardwell launched his career in September 1957 as a sales trainee. He completed the training program in January 1958, advancing to a sales representative.

A leading member of the sales team, Bardwell had won five Company awards for his excellent sales performance.

CONDEX* MULTIPLE CONCRETE CONDUIT



Special fittings — miters — short lengths — expanded web sections available, also adapters to claytile, transite and fiber duct.

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J. M. Lindsey Dies

J. M. LINDSEY, 63, manager, Latin-American sales for ITT Kellogg, Chicago, died on May 9. His death occurred in San Juan, Puerto Rico.

Mr. Lindsey was born at Gainesville, Texas in September, 1898. He

J. M. LINDSEY

had devoted 47 years to the telecommunications industry, having started with Southwestern Bell Telephone Co., in 1914. In 1928, he joined ITT and was assigned to Compania Telephonica y Telegraphica, Mexicana.

In 1937, he joined ITT Kellogg as field representative and was promoted to manager, switchboard sales, in 1951.

He is survived by his widow, Lee, of 340 E. Burlington, Riverside, Ill.

Mrs. Jane Tall Dies

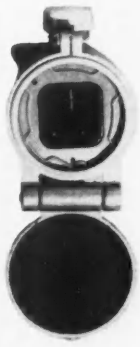
MRS. JANE DAVIES TALL, wife of the editor of "*Industrial Communications*" and daughter of the editor of "*Telecommunications Reports*," passed away, May 11, at the Washington, D. C., Hospital Center.

Mrs. Tall, a graduate of the University of Maryland, was a nursery school teacher at the time of her marriage in 1951 to Robert E. Tall, who heads the Washington newsletter and is a contributing editor of "*Telecommunications Reports*."

In addition to her husband, Mrs. Tall is survived by her parents, Mr. and Mrs. Roland C. Davies, two children, Roberta 8, and Ben, 5, and a brother and a sister.

SUTTLE

SUPPLY LINES



Outdoor Weatherproof Jack Boosts REVENUES!

Subscriber demands for outdoor, backyard, or patio telephone service are growing fast. The SE16151 Outdoor Weatherproof Jack from **Suttle** fills the bill for every outdoor use. Non-corrosive weatherproof aluminum receptacle. This jack makes an excellent extension sale-revenue booster. Another **SUTTLE** *quality* product at low cost. Order from **SUTTLE** or your distributor.

***The Cinderella* TELEPHONE**

Small, lightweight, and exceptionally attractive design. Ringer mounts outside of phone in any location. Dial is illuminated, using tiny 6 volt/115V A. C. transformer: the translucent number plate is lighted indirectly when the handset is lifted or when the night light switch is operated. Available without ringer as extension telephone. Colors: Rose pink, aqua blue, light beige, light gray, white, sea green.

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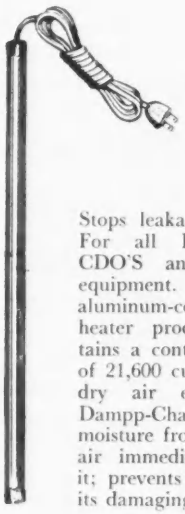

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Stops leakage and corrosion. For all PBX, unattended CDO'S and central office equipment. This low-wattage, aluminum-covered electric heater produces and maintains a continuous circulation of 21,600 cubic feet of warm, dry air every 24 hours. Dampp-Chaser evaporates moisture from equipment and air immediately surrounding it; prevents condensation and its damaging effects.

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Use of COOK BD-1 and BD-2 cable terminal pedestals save you money. **Suttle** stocks these and can furnish immediate delivery.

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CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1800 Johnson Street, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

FAST GROWING Florida Class A Telephone Company with over 56,000 stations has openings for ambitious, qualified supervisors in the following classifications: Outside Plant Engineers, Outside Plant Supervisors, Central Office Equipment Supervisors and Commercial Managers. List qualifications and background in letter to Box No. 150, c/o Telephone Engineer.

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Broad background to include complete familiarity with open wire and cable distribution systems, carrier, transmission, special circuits and pressure systems.

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Thorough knowledge of SxS, crossbar, rotary, multiplex, microwave, transmission criteria & switchboards.

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Extensive experience with central office traffic studies including use of peg counters, CCS tables, toll separation studies, holding time and trunk studies.

-INSIDE & OUTSIDE PLANT TECHNICIANS-

General knowledge of all phases of outside plant construction including pole line construction, cable placement, buried cable and conduit procedures. Familiarity with terminals, induction coils, strand and cable sizes required. Inside Plant Technicians should be familiar with switching gear, power panels, MDF, IMDF, protectors & Meters.

- LIBERAL COMPANY BENEFITS
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- OPPORTUNITY FOR ADVANCEMENT
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All qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.

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Require person familiar with market, sales promotion, distribution, also a technical background in telephone systems desirable. Sales program to independent telephone companies, railroads and other utilities includes such equipment as voice repeaters, PABX, CDO's, etc.

Highly desirable opportunity for responsible, experienced person able to plan and grow in this unique position with an expanding company.

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AMBITIOUS MEN — Qualified as station installers, equipment installers, cable splicers, linemen. Work in midwest. Harris McBurney Co., Inc., P. O. Box 267, Jackson, Michigan.

HELP WANTED

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Write Telephone Repair & Supply Co., 1760 West Lunt Avenue, Chicago, Illinois.

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AUTOMATIC ELECTRIC #80 — ST. LINE, DESK SETS, COILED CORDS, DIAL, $16.00 EA.

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Cook wall MDF, 40 pair, complete with 2, #3800 type 20 pair groups (without alarm circuit) wired to screw terminal blocks, NEW $50.00

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Similar to Cook #100 with ratchet heat coils & alarm circuit, 20 pr. New 15.00

Main Frames, most all types at low prices, cable rack and rolling ladders — Relay racks, etc.
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W. E. 35 Type Fuses
most sizes, 5, 10, 50 pack each 10c, $9. hundred

SUBSTATION AND LINE TYPES

Western Electric 106C, with #107 arrestors and 11C-7 amp fuses, aluminum weatherproof mounting NEW .. $2.50

Aluminum mountings only for W. E. 98A & 106 protectors $1.00

Western Electric #83A, 5 pair or open wire arrestors, New $5.00
reconditioned 4.00

Reliable #222, as above, New 5.00

Reliable P495 saw-tooth blocks with carbons, NEW, per hundred ..... $10. C
less carbons, per hundred ..... 6. C

Cook Tru-Gap blocks, with carbons .. 10. C

Reliable #77 7 amp ceramic fuses .... 10. C

Multiple line protectors for PBX, office and apartment buildings. Adaptable for lead or plastic cable or wire drops, in green enameled easy access metal box. — Saves space — much neater — Western Electric LA & LC type*

LA 11 pr.	$30.00
LA 16	40.00
LC 16	35.00
LA 26	60.00
LC 26	55.00

*all above complete with #26 & 27 discharge blocks and 7A fuses. *Specify type of cable to be used.

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Slits plastic or fabric covered cable. Rigid Phenolic Handle. Stainless steel saddle holds guide and blade in place. Groove guides and supports cable.

CABLE SHEATH SLITTER
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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

The Lunch Is On You

IN CASE you haven't been looking toward Washington lately, the do-gooders are closing in with those proposals which they claim are give-aways at half the price.

Among the programs: Federal Aid to Education, Federal Medical Care For The Aged, Aid For Depressed Areas, Aid For Anybody Who Asks.

We were forcibly reminded of this when an associate of ours dropped a modern parable on our desk.

It's about the king who called in his smartest sidekicks and told them to come up with a simple text on the economic problems of the day — a text that the man in the street could understand.

The wise men came back in one year with 67 volumes profusely illustrated with graphs and charts. But one tottering old gentleman, minus any kind of a diagram, had a different approach.

"There ain't no such thing," he told the royal court, "as a free lunch."

"Waste Not, Want Not"

INTERNATIONAL Telephone & Telegraph scientists have added one more to the list of exotic subjects a telephone engineer should study. Barry Mindes, of I. T. & T. Federal Laboratories, speaking at the recent Radio Engineers meeting in New York pointed out that the ionized exhaust gases from rockets and jet engines are electrical conductors; and they may be used as transmitting and receiving antennae in space. This opens up a broad new frequency range for intra-space communication without adding to the weight of the space vehicles.

The idea of using engine exhausts is not entirely new. Thermo-electric piles, heated by the exhaust gases, have been used to run marine- and automobile-engine ignition systems.

In this period of reckless governmental waste, I. T. & T.'s proposal is refreshing.

Wrong Planet Calls?

IN SNOHOMISH, Washington a few days ago, the police department answered a telephone call from a bewildered man in Tampa, Florida. He was DDD'ing a friend in Florida, but he used the wrong area code.

Oh, well, it was all in the good old U.S.A., just among friends, a piffling little error of 2500 miles that merely amuses. But we shiver to speculate about what may happen in a decade or two. Imagine that you are installing some solar batteries in the Moon colony and your wife in Chicago dials your lunar apartment to ask you if you can come home for the weekend — and her call is answered by a cutie in Mars. Ugh! Will the solar system be large enough then?

Maintainability

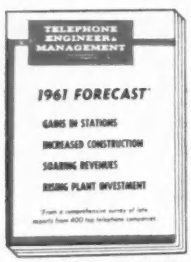
BREATHES there a switchboard-man with soul so dead, who never to the world has said: "The such-n-so who designed this thus-n-that relay, and the purchasing agent who bought it, orta hafta change a spring on it every hour for a year?" We doubt it.

The designers, and the purchasers, of some electrical equipment seem to disregard utterly the expensive sufferings of the maintenance men.

The United States Navy is doing something about it. A 36-page Navy handbook deals with the "improvement of maintainability through design" of electronic equipment, in an effort to reduce maintenance cost and difficulty. (The handbook is: P B 161 025, obtainable from O.T.S., U. S. Dept. of Commerce, Washington, D. C.)

"The First Of Three"

ON page 52 of the May 1 TE&M we reported that AT & T President Kappel told a Chicago press conference AT & T "*could have three satellites ready by Christmas if it got a go ahead from the FCC.*" The statement should have read that AT & T "could be ready with the *first* of three satellites by Christmas. "Thanks to AT & T Vice Pres. James W. Cook for spotting our error.



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* This drawing will give you some idea as to why so few people in the Middle Ages ever survived to enjoy middle age. Not so the Warren Transistor Power Pack, however. This complete transistorized power, ringing, and tone supply for PBX, PAX, and PABX installations positively refuses to age. It requires no nursing. There is no maintenance problem.

Here are other money-saving features:

...no standby equipment is needed where batteries are used in PBX (both ringing and tone generators are dc operated)

...initial cost is lower than the cost of buying individual components separately.

...this unit packs more power (up to 20 amps) in less space than any other power pack available.

Warren offers a complete line: seven 24-volt models and seven 48-volt models, none of which look like the one in the drawing. (We've corrected the situation below.)

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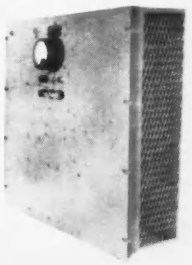

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